Vol. 885 Number 3

OFFICIAL GAZETTE

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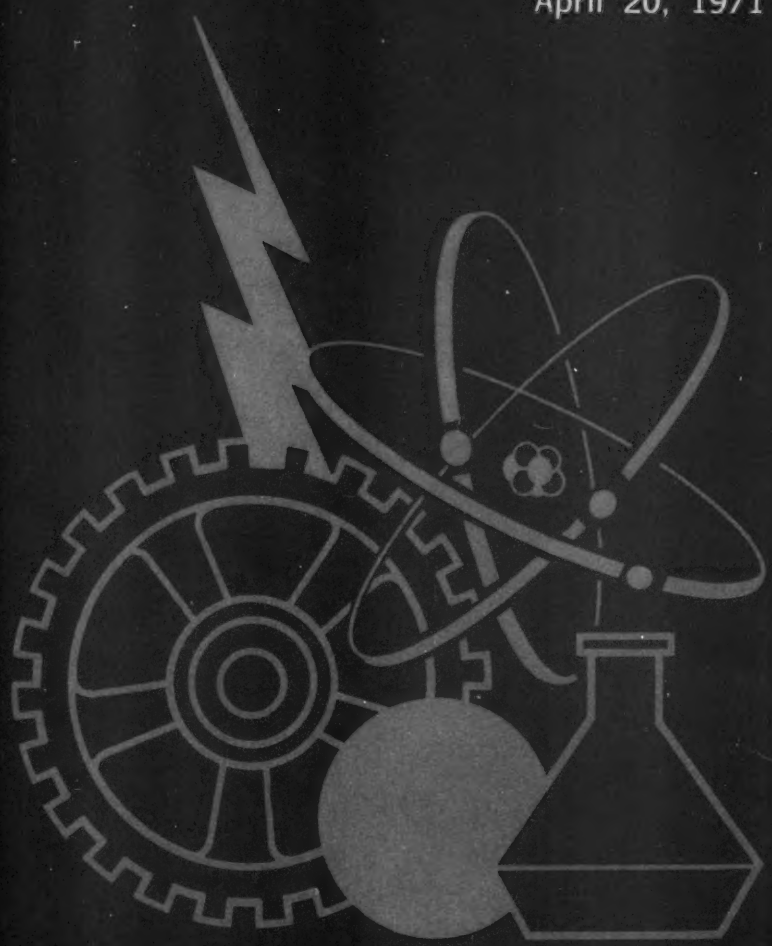
UNITED STATES PATENT OFFICE

SER

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

April 20, 1971



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

April 20, 1971 Volume 885 Number 3

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PATENT OFFICE NOTICES

Certificates of Correction for the Week of Apr. 20, 1971

3,338,832	3,530,214	3,544,577	3,552,720
3,373,111	3,530,957	3,544,581	3,552,909
3,439,166	3,531,442	3,545,686	3,553,003
3,471,103	3,532,549	3,545,723	3,553,438
3,471,240	3,532,653	3,545,871	3,553,467
3,473,411	3,533,553	3,546,132	3,553,681
3,478,322	3,533,831	3,546,643	3,554,138
3,481,927	3,534,144	3,547,541	3,554,265
3,484,506	3,534,580	3,547,651	3,554,281
3,489,483	3,534,719	3,547,891	3,554,821
3,489,763	3,535,055	3,547,893	3,554,907
3,492,199	3,535,983	3,547,972	3,554,977
3,492,669	3,536,025	3,548,162	3,555,030
3,497,870	3,538,136	3,548,459	3,555,327
3,505,276	3,538,578	3,548,880	3,555,334
3,511,655	3,538,703	3,548,998	3,555,501
3,520,910	3,538,750	3,549,376	3,555,585
3,521,638	3,539,386	3,549,416	3,556,128
3,522,283	3,539,887	3,549,548	3,556,252
3,524,632	3,540,088	3,549,559	3,557,046
3,525,465	3,540,227	3,549,733	3,557,857
3,525,778	3,540,913	3,549,875	3,557,868
3,525,794	3,540,976	3,550,073	3,558,643
3,526,645	3,541,547	3,550,347	3,560,401
3,526,655	3,541,785	3,550,690	3,560,549
3,528,379	3,542,321	3,550,743	
3,528,536	3,544,409	3,550,926	
3,528,849	3,544,527	3,552,479	

Lapsed Patents

The following patents have lapsed under the provisions of 35 U.S.C. 151 for failure of payment of remaining balances of issue fees due therein :

3,495,248, issued Feb. 10, 1970.
3,499,131, issued Mar. 3, 1970.
3,515,053, issued June 2, 1970.

Disclaimers

3,105,003.—*Edward N. Walsh,* Chicago Heights, Ill. and *James T. Hallett,* Saratoga, Calif. PESTICIDAL PHOSPHORYLATED MERCAPTALS AND MERCAPTOLES. Patent dated Sept. 24, 1963. Disclaimer filed Dec. 21, 1970, by the assignee, *Stauffer Chemical Company.*

Hereby enters this disclaimer to claims 1, 2, 3, 6, 7, 8 and 10 of said patent.

3,119,590.—*George J. Eriksson,* Morton Grove, Ill. ADJUSTABLE, COLLAPSIBLE, AND ARTICULATED BRACKET FOR SUPPORTING A CONCRETE FORM FOR A BRIDGE FASCIA. Patent dated Jan. 28, 1964. Disclaimer filed Dec. 7, 1970, by the assignee, *Superior Concrete Accessories, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,385,879.—*Karoly Szabo,* Orinda, and *Thomas B. Williamson,* Santa Clara, Calif. THIOALKYL PHENYL CARBONATES. Patent dated May 28, 1968. Disclaimer filed Dec. 21, 1970, by the assignee, *Stauffer Chemical Company.*

Hereby enters this disclaimer to claims 1, 2, 3 and 5 of said patent.

3,432,554.—*John Peters,* Saltcoats, and *James Grigor,* Coatbridge, Scotland. 2,2-BIS(DIFLUOROAMINO)-ALKANES BY REACTING ALIPHATIC KETONE WITH DIFLUORAMINE AND BF_3. Patent dated Mar. 11, 1969. Disclaimer filed Jan. 19, 1971, by the assignee, *United States of America as represented by the Secretary of the Navy.*

Hereby enters this disclaimer to claims 6 to 10 of said patent.

3,510,503.—*Mervin E. Brokke,* Richmond, and *Thomas B. Williamson,* Santa Clara, Calif. and *George E. Lukes,* deceased, late of El Cerrito, Calif., by *Wayne C. Jaeschke,* special administrator, Walnut Creek, Calif. TRIFLUOROBUTENYLTHIOCARBAMATES AND THIOCARBONATES. Patent dated May 5, 1970. Disclaimer filed Dec. 21, 1970, by the assignee, *Stauffer Chemical Company.*

Hereby enters this disclaimer to claims 1, 13, 14, 15, 16, 17 and 18 of said patent.

3,556,988.—*William A. Stover,* Woodbury, and *Harry A. McVeigh,* Gibbstown, N.J. METHOD OF PREPARING COMPOSITE CATALYST AND HYDROCARBON CONVERSION THEREWITH. Patent dated Jan. 19, 1971. Disclaimer filed Nov. 23, 1970, by the assignee, *Mobil Oil Corporation.*

Hereby disclaims the terminal portion of the term of said patent subsequent to Jan. 5, 1988.

Notice of Daylight Saving Time

The Patent Office will operate on Daylight Saving Time from April 25, 1971 through October 31, 1971.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 6, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	12-01-69
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-29-69
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-08-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-02-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-03-69
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	7-06-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-15-69
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-06-70
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	12-23-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	5-22-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	1-15-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	12-01-69
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-02-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	4-24-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods: Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	1-06-70

Expiration of patents: The patents within the range of numbers indicated below expire during April 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,673,978 to 2,677,128, inclusive
Plant Patents..... Numbers 1,267 to 1,273, inclusive

REISSUES

APRIL 20, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

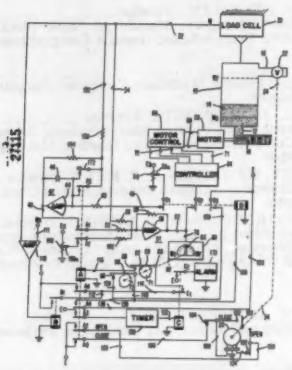
27,115
MASS-FLOW RATE CONTROL

Kenneth W. Goff, Abington, Pa., and Suresh C. Gupta, Sashthamangalam, Trivandrum, Kerala, India, assignors to Leeds & Northrup Company

Original No. 3,329,311, dated July 4, 1967, Ser. No. 509,052, Nov. 22, 1965. Application for reissue July 2, 1968, Ser. No. 748,574

Int. Cl. B65d *5/08*

U.S. Cl. 222—58 **3 Claims**



A constant decreasing set point for the mass in a container is established by an integrating amplifier having a preset constant input signal. The existing mass in the container is measured by a load cell and the measured value is compared with the changing set point. Any difference resulting from the comparison provides an error signal for controlling the discharge of material from the container so as to maintain the desired constant discharge rate. When the mass in the container is reduced to a minimum, rapid refilling is initiated and the discharge during refill is maintained constant at the value existing before refill was initiated. When refill is completed or after a fixed time sufficient for refill has elapsed, the controlled discharge is resumed without a bump since the capacitor of the integrating amplifier is maintained at a discharge such that no error signal exists during refill.

27,116
PIEZOELECTRIC MULTIELEMENT DEVICE

Kenneth F. Miller, Glendale, and Melvin H. Smith, Parris, Calif., assignors to Bourns, Inc.

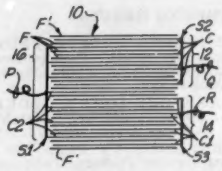
Original No. 3,378,704, dated Apr. 16, 1968, Ser. No. 518,902, Jan. 5, 1966. Application for reissue Dec. 5, 1968, Ser. No. 806,755

Int. Cl. H01v *7/00*

U.S. Cl. 310—9.0 **10 Claims**

[1. A piezoelectric device comprising:

an integral block-like structure comprising a unitary mass of polarized polycrystalline piezoelectric material comprising structurally integral first and second portions each polarized oppositely to the other and each of such portions containing a respective one of first and second sets of individually-insulated superposed thin electrically-conductive elements more than two in number and said portions each containing a respective portion of a third set of individually-insulated thin electrically-conductive elements, the said conductive elements of said third set thereof being distributed among and alternating with conductive elements of the said first and second sets of elements; and



first and second electric terminal means the first of which is connected to said third set of conductive elements and the second of which is connected to said first and second sets of conductive elements.]

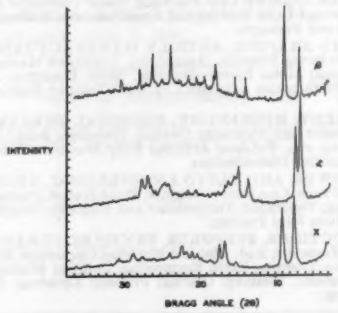
27,117
METAL FREE PHTHALOCYANINE IN THE NEW X-FORM

John F. Byrne, Worthington, and Philip F. Kurz, Columbus, Ohio, assignors to Xerox Corporation, Rochester, N.Y.

Original No. 3,357,989, dated Dec. 12, 1967, Ser. No. 505,723, Oct. 29, 1965, which is a continuation-in-part of Ser. No. 375,191, June 15, 1964. Application for reissue June 10, 1968, Ser. No. 741,815

Int. Cl. C09b *47/08*

U.S. Cl. 260—314.5 **2 Claims**



A new polymorphic form of metal-free phthalocyanine is disclosed. This polymorph, referred to as the "X-form," is identified by X-ray and infrared spectra. Several methods of preparing the X-form of metal-free phthalocyanine are disclosed.

PLANT PATENTS

GRANTED APRIL 20, 1971

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,047
HYDRANGEA PLANT

Edgar G. Aldridge, Bessemer, and Loren L. Aldridge, Birmingham, Ala., assignors to Aldridge, Inc., Birmingham, Ala.

Filed Aug. 21, 1969, Ser. No. 852,124
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 **1 Claim**

A new variety of hydrangea plant characterized by its very large and showy flower clusters which include an unusually large number of flowers, all flowers being sterile and each consisting of numerous petaloid-sepals. The mature sepals are white and slowly turn to green and ultimately to brown. The plant branches extensively, grows to a height of about six feet, blooms continuously and profusely from April to August and the foliage turns to a deep wine color in autumn.

3,048
AZALEA PLANT

Carville M. Akehurst, Perry Hall, Md., assignor to Akehurst Nurseries, Perry Hall, Md.

Filed Apr. 1, 1969, Ser. No. 812,474
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—57 **1 Claim**

An azalea plant which is a sport of the azalea Hino Crimson, but with Empire Rose flowers.

3,049
STRAWBERRY

Edna Graham, One Farm, Shear Hill Road, Mahopac, N.Y. 10541

Filed July 17, 1969, Ser. No. 842,741
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—49 **1 Claim**

1. An everbearing strawberry that is truly an everbearer, one that is in continuous production from first spring fruiting until plants are killed by heavy frost, characterized by its habit of successive ripening of berries on each cluster; setting and ripening of fruits on runner plants to third and fourth progression on runners; exceptional vigor and reproductiveness; exceptional weather hardiness; small plants; large berries.

3,050
AVOCADO

William Pennock, Toa Baja, Puerto Rico, assignor to Commonwealth of Puerto Rico, as the representative of all of the people of Puerto Rico

Filed Mar. 5, 1969, Ser. No. 804,720
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—44 **1 Claim**

The original tree is a hybrid seedling having Guatemalan and West Indian parentage. The clove was propagated asexually. The tree is a prolific bearer having characteristics favorable to production and transportation.

3,051
ROSE PLANT

Jan Spek, Boskoop, Netherlands, assignor to Jackson & Perkins Company, Newark, N.Y.

Filed May 8, 1969, Ser. No. 823,194
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—29 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a similarity substantially identical in all respects to the parent variety "Nordia," except for the color of the buds and open flowers, a capability of being forced without going "blind," a continuous blooming habit under forcing conditions, and a distinctive, attractive, truer and deeper red color of the buds and open flowers, corresponding to near Cardinal Red, as compared to the lighter and more Scarlet Red flower color of "Nordia."

3,052
FLOWERING CRABAPPLE TREE

Robert C. Simpson, Vincennes, Ind., assignor to Cole Nursery Company, Inc.

Filed July 22, 1969, Ser. No. 843,862
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of flowering crabapple tree, *Malus cultivar*, having a rapid informal narrow upright growth habit, attractive foliage, an abundance of large double or semi-double, dark to purplish red flowers that do not fade, prominently displayed, an extended bloom period, a minimum production of fruits, and apparent freedom from scab and other diseases.

3,053
AFRICAN VIOLET

Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany

Filed Oct. 7, 1968, Ser. No. 765,700
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

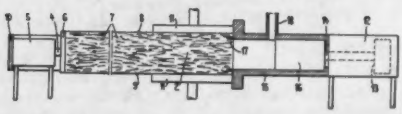
A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

PATENTS

GRANTED APRIL 20, 1971

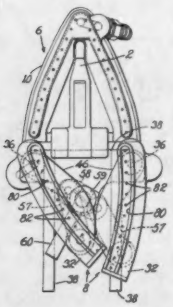
GENERAL AND MECHANICAL

3,575,136
METHOD AND AN INSTALLATION FOR TREATING CHIP WOOD BOARDS AND CHIP WOOD BOARDS TREATED ACCORDING TO THIS METHOD
Paul Harder, Baselstrasse 62, 4142 Munchenstein, Switzerland
Filed Feb. 26, 1968, Ser. No. 708,065
Claims priority, application Switzerland, Mar. 11, 1967, 3556
Int. Cl. B05c *3/20*
U.S. Cl. 118—410 **2 Claims**



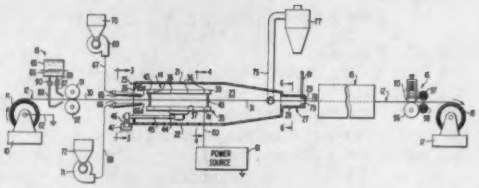
Certain areas of chip wood board are increased in density by means of an injection device having a plunger therein and an outlet. A circumferentially closed relatively thin wall is supported by the device adjacent the outlet and is pressed into the board for limiting the area of the board to be treated. A density-increasing material is then injected and guided by the wall into the board. Holding members engage opposite surfaces of the board, and a clamping plate holds the board in position relative to the injection device.

3,575,137
ADHESIVE APPLYING DEVICES
Gerard J. Marquis, Arlington, Mass., assignor to USM Corporation, Flemington, N.J.
Filed May 31, 1968, Ser. No. 733,573
Int. Cl. B05c *5/02*
U.S. Cl. 118—411 **2 Claims**



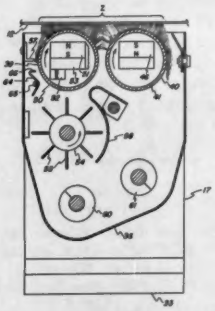
An adhesive applying device for a shoe lasting machine with heated nozzles, each nozzle having outlets and an inlet through which a solid rod of thermoplastic adhesive is fed for melting in the nozzle and extrusion through the outlets onto the generally flat forepart of a shoe insole bottom.

3,575,138
ELECTROSTATIC COATING OF METAL POWDER ON METAL STRIP
Lowell W. Austin, Weirton, W. Va., and James N. Baker, Pittsburgh, Pa., assignors to National Steel Corporation
Filed Jan. 5, 1968, Ser. No. 695,957
Int. Cl. B05b *5/02*
U.S. Cl. 118—634 **13 Claims**



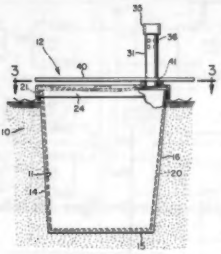
Apparatus for applying a metal coating on continuously moving metallic strip, particularly steel strip, by electrostatically depositing in one or in a plurality of regions a uniform layer of metal powder on the metallic strip and thereafter subjecting the strip and the layer of metal powder to heat treatment and then compaction to effect cohesion of the particles of metal powder and adhesion of the metal powder particles to the strip.

3,575,139
ELECTROSTATIC MAGNETIC DEVELOPER UNIT GATING APPARATUS
Larry W. Nuzum, Colombus, Ohio, assignor to Xerox Corporation, Rochester, N.Y.
Filed June 4, 1969, Ser. No. 830,437
Int. Cl. B05b *5/00*
U.S. Cl. 118—637 **8 Claims**



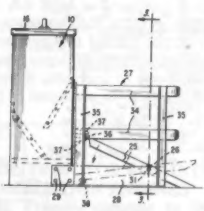
A multiple gating arrangement combined with multiple brush developing unit formed with a magnetic developing blanket for effecting quick production and collapse of magnetic developing bristles for use in an electrostatic reproduction machine.

3,575,140
ANIMAL REFUSE CONTAINER
Imre Prepeliczay, 2994 E. 126 St., Cleveland, Ohio
Filed July 17, 1969, Ser. No. 842,495
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **4 Claims**



A container adapted for insertion in a ground cavity so that the top portion thereof is substantially at ground level, including a grate forming a lid for the container and for securing a removable plastic liner therein. A hollow cylinder is mounted on the grate acting as a support for a manually swingable cover plate and as a receptacle for an animal attracting substance. The plastic liner within the container may be partially filled with a deodorizing and waste disintegrating chemical and the liner may be readily removed for disposal purposes.

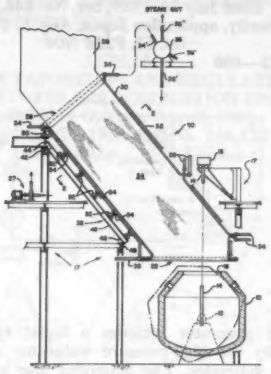
3,575,141
ANIMAL FEEDER
Frederick R. Elkins, 3201 W. Caperton St., Shreveport, La.
Filed Oct. 8, 1969, Ser. No. 864,687
Int. Cl. A01k *05/02*
U.S. Cl. 119—55 **10 Claims**



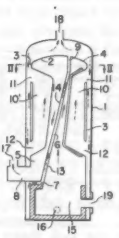
A single or plural unit animal feeder particularly for dogs and cats which is substantially rodentproof and weathertight and is further characterized by the absence of springs and moving linkages. The device is sturdy in construction and knocks down readily for shipment and is very reliable in operation. A sliding access door to a feed box is biased upwardly by a counterweighted pivoted platform which operates under the weight of the animal to slide the door downwardly to a feeding position.

3,575,142
SUPPORT FOR INCLINED FUME HOOD
Andrew J. Sefcik, Ridgewood, N.J., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed July 1, 1969, Ser. No. 838,272
Int. Cl. F22b *1/18*
U.S. Cl. 122—7 **6 Claims**

A method and apparatus for supporting an inclined tubular fusion welded wall fume hood above a "basic oxygen" process steel-making furnace. A strongback support composed of structural I-beams is disposed beneath the fume hood and is fixed thereto at the upper end of the inclined section. The hood is supported by the strongback on bearing surfaces interposed between the hood and the I-beams to permit relative movement therebetween in order to accommodate movement of the hood caused by thermal expansion in a downward direction.

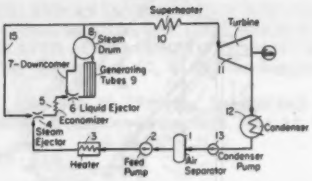


3,575,143
BOILER AND AN ORDINARY TYPE HOT WATER DEVICE
Noboru Maruyama, No. 26-14 Shirasagi 2-chome, Nakano-Ku, Tokyo, Japan
Filed June 18, 1969, Ser. No. 834,415
Claims priority, application Japan, July 12, 1968, 43/48456
Int. Cl. F22b *7/08*
U.S. Cl. 122—166 **6 Claims**



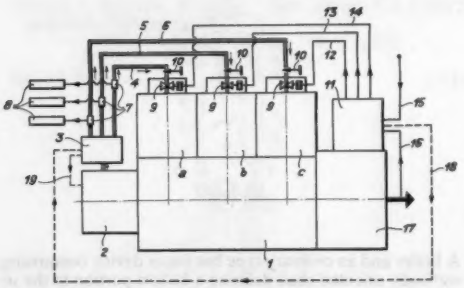
A boiler and an ordinary-type hot water device comprising; a vertically oriented shell defining a hollow portion in the interior thereof, a heat absorbing body having an inwardly depressed concave form disposed within and spaced from said shell defining a fluid region therebetween, said fluid region including a peripheral fluid region portion about said heat absorbing body, a slanted inner flat body disposed within said heat absorbing body defining a semicylindrical heating gas chamber, successively narrowed upwardly, between a downside of said slanted flat body and said heat absorbing body, and also a semicylindrical heating gas space, successively enlarged upwardly, between an upside of said slanted flat body and said heat absorbing body, said inner flat body defining an opening at the top thereof communicating said semicylindrical heating gas chamber with said semicylindrical heating gas space, said flat body including a conduit communicating with said fluid region, means for passing a vaporizable fluid into said conduits, means for providing a heating gas in said semicylindrical heating gas chamber at the bottom thereof, and flue gas exit means communicating with said peripheral fluid region portion for removing said heating gas from said peripheral fluid region portion at the bottom thereof.

3,575,144
VAPOR GENERATOR
Yasuro Takahashi, and Masahiro Soda, Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Chiyoda-Ku, Tokyo, Japan
Filed July 24, 1969, Ser. No. 844,471
Claims priority, application Japan, Aug. 6, 1968, 43/55264
Int. Cl. F22d 7/04
U.S. Cl. 122—406 6 Claims



A vapor generator includes a liquid ejector which is operated by the high-pressure water for circulating fluid within the generator. The apparatus also includes a steam ejector or condensation-type ejector which is operated by part of the vapor generated within the vapor generator to apply a pumping pressure to the feed liquid directed into the water ejector.

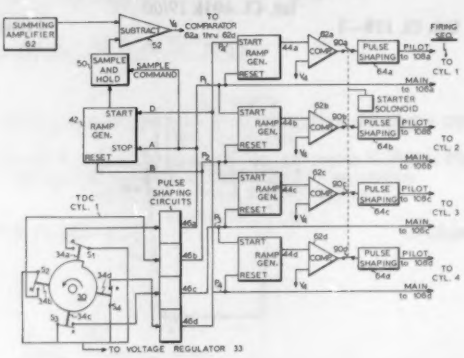
3,575,145
METHOD AND APPARATUS FOR INJECTING FUEL INTO THE CYLINDERS OF A MULTICYLINDER PISTON-TYPE INTERNAL COMBUSTION ENGINE
Anton Steiger, Illnau, Zurich, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Nov. 5, 1968, Ser. No. 773,607
Claims priority, application Switzerland, Nov. 10, 1967, 15812/67
Int. Cl. F02d 5/00
U.S. Cl. 123—32 4 Claims



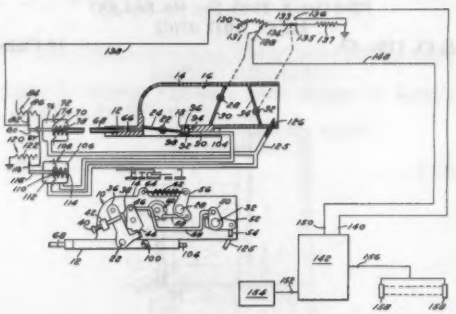
Fuel injection apparatus for multicylinder engines comprising a fuel pump, delivery lines to the individual cylinders, separate means to measure the volume of fuel flowing through those lines, and means to adjust the injection pressure in those lines or the injection opening times therefrom into the individual cylinders.

3,575,146
FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
John Rogers Creighton, Berkely, and Cormac Garrett O'Neill, Castro Valley, Calif., assignors to Physics International Company, San Leandro, Calif.
Filed Feb. 6, 1969, Ser. No. 797,175
Int. Cl. F02m 51/00
U.S. Cl. 123—32 20 Claims

A fuel injection system for diesel engines is provided comprising an electronic control system for controlling fuel injection pumps made with electrostrictive material, to provide proper pilot injection of fuel followed by main fuel injection.



3,575,147
ELECTRONIC FUEL INJECTION SYSTEM
Robert S. Harrison, and Arthur R. Harris, Detroit, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Feb. 12, 1969, Ser. No. 798,650
Int. Cl. F02m 51/00
U.S. Cl. 123—32EA 15 Claims

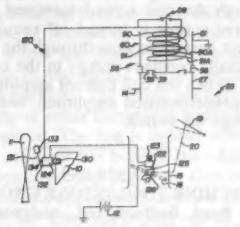


Electrical signals corresponding to air valve position, the vacuum signal between the air valve and the throttle blade, and the intake manifold pressure determine the width of pulses applied to electrical fuel injectors located in the intake manifold. Pulse frequency is determined by an electrical signal generated by engine revolution. Electronic circuitry shortens the basic pulse width as a function of pulse frequency so fuel delivery is determined only by the above electrical signals.

3,575,148
VACUUM CONTROL APPARATUS
Earl W. Walter, 4335 Cambridge St., Burnaby, British Columbia, and Mark A. Du Mont, 3903 W. 23rd Ave., Vancouver, British Columbia, Canada
Filed Mar. 21, 1969, Ser. No. 809,276
Int. Cl. F02m 23/04; F02d 11/10
U.S. Cl. 123—97 2 Claims

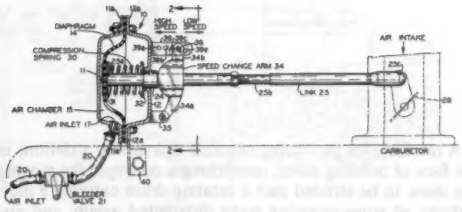
A vacuum relieving apparatus having a solenoid operated valve controlled by an electric circuit including switches

which are actuated to open the valve and supply air to the cylinders of an engine when the engine throttle valve setting



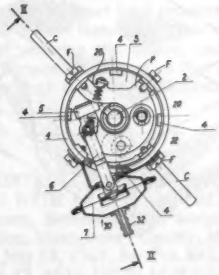
is for idling speed and the engine revolutions exceed that of idling speed.

3,575,149
DEVICE FOR LIMITING THE SPEED OF AN ENGINE
James R. Graham, Anderson, Ind., assignor to Pierce Governor Company, Inc., Upland, Ind.
Filed Sept. 11, 1968, Ser. No. 759,022
Int. Cl. F02d *11/08;* **F01b** *9/02;* **F16j** *1/10*
U.S. Cl. 123—103 **8 Claims**



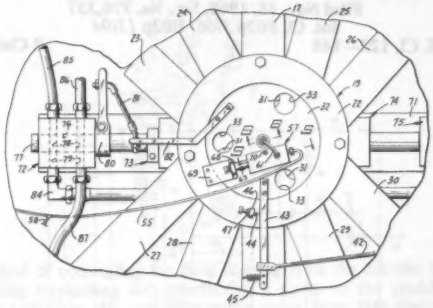
A wall and a flexible diaphragm are connected to provide a closed air chamber. An inlet is provided in the wall for supplying air having a pressure that is proportional to the speed of the engine. A compression spring engages the diaphragm to set the air pressure required in the air chamber to move the diaphragm. A link is attached to the diaphragm for limiting the engine speed in response to diaphragm movement.

3,575,150
IGNITION DISTRIBUTOR FOR INTERNAL COMBUSTION ENGINES
Roger Habert, Paris, France, assignor to Ducellier & Cie, Paris, France
Filed July 3, 1969, Ser. No. 838,991
Claims priority, application France, July 12, 1968, 159,030
Int. Cl. F02p *5/10*
U.S. Cl. 123—117.1 **2 Claims**



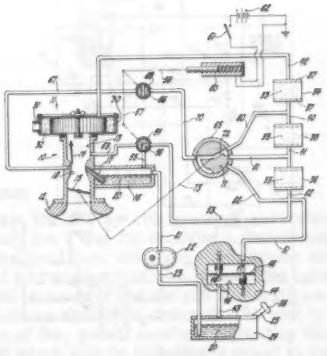
A contactless distributor in which the ignition timing is energized in response to signals produced by a plurality of magnetic elements moving in a circular path past a magnetodiode pickup element. The magnetic elements are mounted on a plate or disc attached to the distributor shaft and the pickup element is mounted for movement along the path to vary the ignition timing.

3,575,151
MEANS FOR VAPORIZING AND REGULATING AIR-FUEL MIXTURES FOR COMBUSTION ENGINES
Richard F. Sragal, 20016 Orleans, Detroit, Mich.
Filed Aug. 29, 1968, Ser. No. 756,122
Int. Cl. F02m *25/06, 37/04*
U.S. Cl. 123—119A **10 Claims**



A method and means for vaporizing and regulating air-fuel ratios of internal combustion engine fuel mixtures, and which means includes a heat system for inducing a proportional amount of heat in the form of exhaust gas into each cylinder of an engine with the fresh intake of air and fuel into each cylinder, and an air-fuel system which incorporates an air chamber for feeding an air-fuel mixture to the cylinders of the engine, and wherein the amount of air entering the air chamber is controlled by a rotatable regulator plate provided with a plurality of orifices that coact with orifices in the top wall of the air chamber, and wherein the rotation of the regulator plate simultaneously operates a fuel flow regulator apparatus and a thermo modulator for regulating the flow of said exhaust gas to each cylinder.

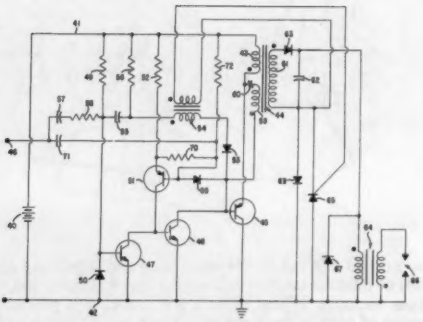
3,575,152
VAPOR RECOVERY USING A PLURALITY OF PROGRESSIVELY ABSORBENT BEDS CONNECTED IN SERIES
Joseph T. Wentworth, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 1, 1969, Ser. No. 862,781
Int. Cl. F02m *25/08*
U.S. Cl. 123—136 **10 Claims**



A vapor recovery system for the controlled adsorption and desorption cycling of fuel vapors in an internal combustion

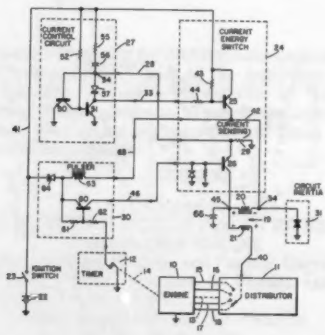
engine comprising at least two vapor adsorbent beds connected in series to the fuel bowl of the engine carburetor and to the fuel tank with the adsorbent bed nearest to the source of fuel vapor becoming the most saturated during an adsorption cycle; and, throttle-controlled valve conduits connecting the absorbent beds to the fuel-air induction conduit of the carburetor whereby the least loaded adsorbent bed is purged during low engine loads but, as the throttle is opened to the full open position, all of the adsorbent beds will be purged.

3,575,153
REGULATED VOLTAGE CONVERTER
James T. Hardin, Lambertville, Mich., and William J. Roberts, Toledo, Ohio, assignors to Eltra Corporation, Toledo, Ohio
Filed Nov. 18, 1968, Ser. No. 776,337
Int. Cl. F02p *3/06;* **H02p** *13/04*
U.S. Cl. 123—148 **8 Claims**



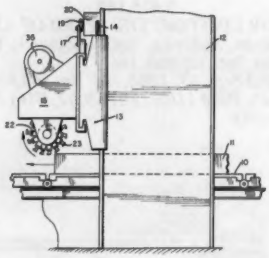
A volt-second controlled DC to DC converter for use in capacitive discharge circuits such as flame heater exciters and ignition systems. A transistor switch in series with the primary of a transformer is turned on for a period of time inversely proportional to the supply voltage, thereby resulting in a constant peak primary current which is independent of the supply voltage. When the transistor switch is turned off, the secondary current produced by the collapsing magnetic field charges a capacitor which is connected in a capacitive discharge system.

3,575,154
CONSTANT-ENERGY IGNITION SYSTEMS
Douglas W. Taylor, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed June 9, 1969, Ser. No. 831,534
Int. Cl. F02p *3/02*
U.S. Cl. 123—148E **18 Claims**



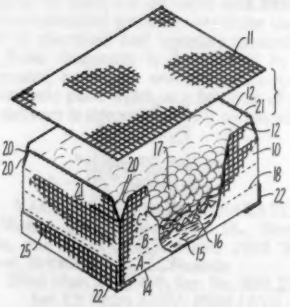
A constant-energy ignition system controlled by a solid-state circuit having an emitter-follower current sensing unit in accordance with the current flowing through the ignition coil. A flywheel diode is connected between the coil and ground to maintain current through the coil just prior to ignition. Semiconductor switches are connected to the coil which are turned on and off by the current sensing unit to increase current through the coil a predetermined magnitude. Then the coil current source is turned off requiring the flywheel diode to permit current to flow through the coil for maintaining a substantially constant energy in the coil irrespective of engine speed. When the coil current amplitude has decreased to a second predetermined amplitude, coil current is again supplied through the switch.

3,575,155
MACHINE TOOL (STONE GROOVER)
Wilmer Dale Byrd, Bedford, Ind., assignor to Ingalls Stone Company, Inc., Bedford, Ind.
Filed Mar. 20, 1968, Ser. No. 716,283
Int. Cl. B28d *1/18*
U.S. Cl. 125—3 **11 Claims**



A machine for producing decorative, irregular striations in the face of building stone, comprising a conveyor for moving the stone to be striated past a rotating drum carrying a multiplicity of stone-grooving teeth distributed axially and circumferentially on the cylindrical face of the drum. Each tooth is supported from the drum through a resiliently yieldable mounting permitting limited displacement of the tooth axially, radially, and circumferentially of the drum under the influence of the cutting effort. If desired, the drum may be mounted for reciprocation axially of itself and transversely to the path of conveyor movement.

3,575,156
PREPACKAGED FIRE AND DISPOSABLE BARBECUE
Leo W. Hosford, 8 La Cresenta Way, San Rafael, Calif.
Filed Oct. 30, 1969, Ser. No. 872,571
Int. Cl. A47j *37/00;* **F24b** *3/00*
U.S. Cl. 126—25 **10 Claims**



A portable packaged barbecue intended for disposal after a single use, in which the basket for the fire is formed of

woven wire mesh, open at the top with the top edge provided with suitable cuts so that may be folded inwardly. The basket is provided with three layers of material preferably, the bottom layer being quick-starting material such as excelsior, the middle layer being kindling such as wood chips, and the top layer being charcoal of almond to walnut size. The grill for the barbecue fits within the basket over the charcoal and when the top edges of the basket are turned inwardly, the same forms a solid package. The whole package may be encased in a paper bag or other flammable wrapping. Barbecuing is instantly prepared. The bag is lighted with a match to start and after the excelsior has burned, the edges are folded back and the grill removed. The edges are then bent inwardly to support the grill at the appropriate distance above the fire. At the end of use, the charcoal is allowed to burn out or doused, and the basket and grill disposed of.

3,575,157

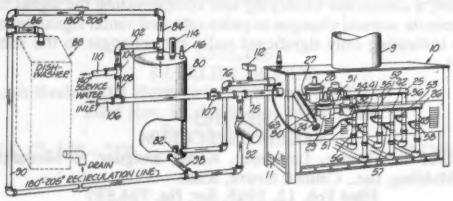
HOT WATER HEATING SYSTEM FOR PROVIDING HOT RINSE WATER AT UNIFORM TEMPERATURE

Alfred Whittel, Jr., Los Angeles, Calif., assignor to Raypak Company Inc., El Monte, Calif.

Continuation of application Ser. No. 866,134, Oct. 9, 1969, which is a continuation of application Ser. No. 711,406, Mar. 7, 1968. This application July 8, 1970, Ser. No. 56,168

Int. Cl. A47l *15/00;* **F24h** *1/18, 9/20*

U.S. Cl. 126—362 **17 Claims**



The invention is in the field of hot water heating and supply systems constructed to be able to supply hot rinse water at a temperature of, for example, 180° to 205° F. for the duration of relatively short but rapid draws, while maintaining this temperature. An accumulator tank of limited volumetric capacity is provided with a primary circulation loop between the lower part of the tank and the heater. The accumulator tank supplies a distribution loop including a dishwasher which is to be supplied with hot rinse water for sanitation purposes, at a temperature to be maintained in a range, for example, of 180° to 205° F. Makeup cold water is supplied from a city water line. A circulator provides for continuous circulation in the primary loop and when there is a draw of hot rinse water, cold water feeds in from the city water line. The heat source is modulated by thermostatic means responsive to the temperature of the incoming water to the heater. The heat source is capable of being modulated over a range adequate to meet load requirements so that in the event of a draw of hot rinse water, this is quickly sensed by the cold water entering the heater, causing immediate response by the thermostatic means so that the temperature in the accumulator tank is effectively maintained during the draw.

3,575,158

METHOD OF CONTROLLING URINE FLOW FROM THE BLADDER WITH AN INPLANTABLE PUMP

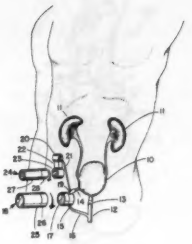
George D. Summers, Bethesda, Md., assignor to Fairchild Hiller Corporation, Montgomery County, Md.

Filed July 18, 1969, Ser. No. 842,921

Int. Cl. A61b *19/00;* **A61f** *1/24*

U.S. Cl. 128—1 **6 Claims**

An implantable urinary control apparatus for controlling the flow of urine from the bladder including a pump connected to the bladder for pumping urine out of the bladder and into a natural or artificial channel so that it can be discharged from the body. The apparatus also includes a sensor connected to the natural or to an artificial urinary bladder for detecting the pressure in the bladder as it fills with urine, and an alarm unit connected to the sensor for giving warning that the bladder is filling with urine when the sensor detects the pressure caused by urine in the bladder. A



method of controlling the flow of urine from the bladder including implanting and connecting a pump to the bladder and activating the pump to pump urine from the bladder when the bladder is filling with urine. The method also includes implanting a sensor in the body for detecting the pressure in the bladder as it fills with urine, and implanting and connecting an alarm unit to the sensor so that the alarm unit will give warning that the bladder is filling with urine when the sensor detects the pressure caused by urine in the bladder.

3,575,159

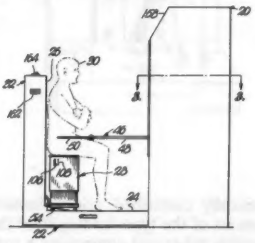
BONE STRUCTURE MISALIGNMENT DETERMINING APPARATUS HAVING POSITIONING MECHANISM FOR SEATED PATIENT

Donald L. Pile, Topeka, Kans., and Harold O. Irwin, Rossville, Kans. said Irwin assignor to said Pile

Filed Oct. 11, 1968, Ser. No. 766,774

Int. Cl. A61b *5/10*

U.S. Cl. 128—2 **10 Claims**



Apparatus for use by chiropractors and other medical professionals has a seat for receiving a patient suspected of having misaligned bone structure. In particular, contact tips are shifted into engagement with the notches below the anterior-superior crests of the ilia and any deviation from the proper positions thereof is detected. The seat is provided with a pair of flat, pivotal members supporting the ischia of the patient which may be individually raised to compensate for any measured deviation. The required degree of movement of a given member is registered on a dial, the data thus obtained being used to prepare an ischial lift for the patient.

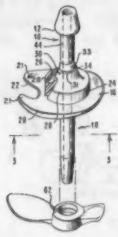
3,575,160
INSTRUMENTS FOR ADMINISTERING FLUIDS INTO THE INTESTINAL TRACT PER RECTUM

Alexander A. Vass, and Clara Vass, 309 E. 87th St., New York, N.Y. 10028

Continuation-in-part of application Ser. No. 670,603, Sept. 26, 1967, now Pat. No. 3,469,575. This application Nov. 13, 1968, Ser. No. 775,486

Int. Cl. A61m 3/00

U.S. Cl. 128—2R 15 Claims



An instrument for administering fluid into the intestinal tract per rectum, which includes a tube having a rectum entering end portion, the tube having enlargements distally of said end portion engageable against the body area surrounding the anal opening of the rectum and entering thereinto for sealing the same when said end portion is disposed within the rectum, to seal the anal orifice, and another enlargement distally spaced from said first enlargements and engageable by body portions spaced distally from the anal opening for retaining the instrument in place after it is in anal orifice sealing position.

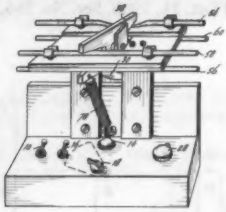
3,575,161
VALVE FOR BIOLOGICAL SYSTEMS

Seymour B. London, 35 E. DiLido Drive, Miami Beach, Fla.

Filed Mar. 7, 1968, Ser. No. 711,426

Int. Cl. A61b 5/02; F16l 55/14

U.S. Cl. 128—2.05 7 Claims



An electronically controlled, contamination-free valve for biological systems of the type feeding fluid through a plurality of compressible tubes and comprising a rocker arm pivotable so as to compress the tubing and control fluid flow, as a photocell circuit senses variant light transmission characteristics of the fluid feeding through the tubes.

3,575,162
PHYSIOLOGICAL MONITORS AND METHOD OF USING THE SAME IN TREATMENT OF DISEASE

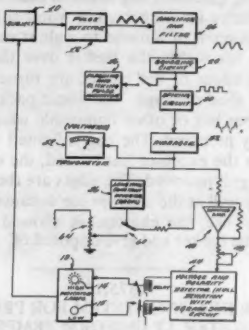
Kenneth R. Gaarder, 6316 Rockhurst Road, Bethesda, Md.

Filed Dec. 23, 1968, Ser. No. 785,908

Int. Cl. A61b 5/02

U.S. Cl. 128—2.05T 10 Claims

Psychotherapeutic treatment of a subject is facilitated by providing the subject with meaningful feedback information derived with the aid of a self-monitoring machine which measures a physiological or psychophysiological variable not ordinarily sensed by the subject. Depending on the nature of the relationship between the variable and the unwanted condition being treated or investigated, the subject learns to gain control over or to account for adverse or unwanted changes in the variable, thereby aiding in the treatment of the unwanted condition or the recognition of the unwanted condition. A specific embodiment of a self-monitor comprises a detector for generating an electrical signal at each heart pulse, a circuit for modifying and compensating the signal to eliminate normal changes in pulse rate and visual signal lights for indicating only significant pulse rate changes to the subject.



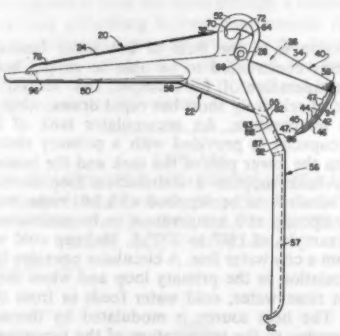
3,575,163
VAGINAL SPECULUM

Arthur D. Gasper, Lawrence, Kans., assignor to Monarch Molding, Inc., Council Grove, Kans.

Filed Feb. 12, 1968, Ser. No. 704,599

Int. Cl. A61b 1/32

U.S. Cl. 128—17 14 Claims

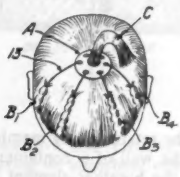


A disposable two-piece, plastic vaginal speculum with variable proximal end openings and multiple distal end opening adjustments. The blades are pivoted on a shiftable hinge structure at their proximal ends and the anterior bladepiece has an operating lever with a depending integral trigger latch having latching teeth on the side facing the blades. The posterior bladepiece includes a handle and slotted side ears which receive trunnions on the anterior blade and permit the hinge shift. Openings in part of the handle provide latch abutments for the teeth on the trigger latch. The trigger latch and blade lever have inherent resilience providing flexing to permit ratcheting of the latch teeth past a latch abutment when distal blade ends are pivoted to open position and the trigger latch is urged by the integral resilience to its latched condition. The trigger latch is manually flexed toward the rear by the operator to close the blades.

3,575,164
FACELIFT FOR COIFFURE WITH CONCEALED ANCHOR

Leah Heale, 5284 Hoyet Drive, San Jose, Calif.

Continuation of application Ser. No. 623,885, Mar. 17, 1967, now abandoned. This application May 19, 1969, Ser. No. 830,190
Int. Cl. A61f 5/08
U.S. Cl. 128—76 **7 Claims**

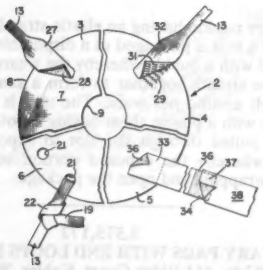


A flat anchor member having a hole therein for receiving a lock or "pony tail" of hair to secure the anchor member at a desired location on a wearer's scalp and having a plurality of eyelets at selected points about the hole for attaching thereto one end of each of a selected number of elastic bands, each band extending under tension from the anchor member to a braided lock of the wearer's hair rooted adjacent a portion of the wearer's face to which it is desired to apply "lift" tension.

3,575,165
FACELIFT DEVICE

Leah Heale, 5284 Hoyet Drive, San Jose, Calif.

Filed Nov. 19, 1969, Ser. No. 877,896
Int. Cl. A61f 5/08
U.S. Cl. 128—76B **8 Claims**



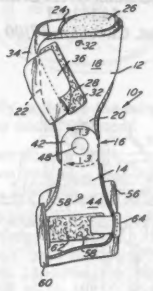
A facelift device adapted to be worn on the head in a manner that it may be covered by a wig, the facelift device including an anchor portion adapted to be engaged by the ends of a multiplicity of tension members, the other ends of which are selectively secured to the wearer's skin closely adjacent the hairline and in a position to tension the skin to eliminate lines and wrinkles therefrom.

3,575,166
KNEE BRACE

Maurice Rosman, 6165 Elmwood Ave., and Anthony Calabrese, 2529 S. Warnock St., Philadelphia, Pa.

Filed May 14, 1968, Ser. No. 728,929
Int. Cl. A61f 3/00
U.S. Cl. 128—80 **7 Claims**

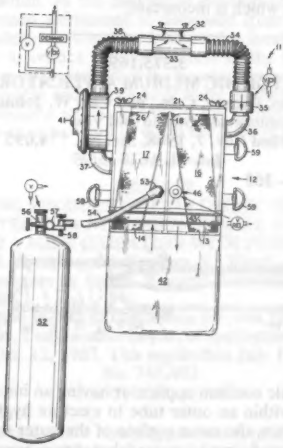
A knee brace is disclosed which closely simulates the rocking-hinge joint motion and sliding motion of a knee. The knee brace is comprised of an upper rigid body and a lower rigid body, each having legs pivotably coupled together in a manner so that the legs may pivot relative to each other about an axis generally perpendicular to the zone of overlap and may slide relative to each other in all radial directions generally parallel to the zone of overlap. In one embodiment, the legs may also pivot toward and away from one another. The knee brace may be worn under the pants of the wearer who may run, walk, or sit down without giving any indication that he is wearing a knee brace.



3,575,167
MULTIPURPOSE BREATHING APPARATUS

Charles E. Michielsen, 1120 Cervantes Way, Pacifica, Calif.

Filed June 6, 1968, Ser. No. 735,143
Int. Cl. A62b 7/04
U.S. Cl. 128—142.2 **3 Claims**



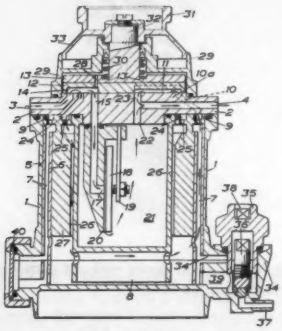
A versatile closed-circuit breathing apparatus has a rectangular canister which is partitioned to provide for two separated volumes of CO_2 absorbent. A mouthpiece, tubing and nonreturn valves, including a demand valve on the inhalation side, define a breath flow circuit in which exhalation passes through one volume of CO_2 absorbent then through an expansible breathing bag and which is also a moisture trap and then back to the mouthpiece through the other volume of absorbent. Loss of effectiveness from moisture channelization is initially confined largely to one-half of the total volume of absorbent thereby providing for more uniform effectiveness over a long period of use. The construction is readily adaptable to a variety of uses including protection from contaminated atmospheres of various kinds, diving, resuscitation, decompression and medical uses.

3,575,168

VOLATILE ANAESTHETIC VAPORISING APPARATUS

Wilfred Jones, Riddlesden, Keighley, and Ronald William Carter, Keighley, England, assignors to Cyprane Limited, Yorkshire, England

Filed Nov. 29, 1968, Ser. No. 779,791
Claims priority, application Great Britain, Nov. 29, 1967, 54242/67
Int. Cl. A61m *17/00*
U.S. Cl. 128—188 2 Claims



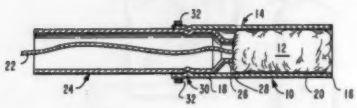
A volatile anesthetic vaporizing apparatus including a rotary percentage control plate valve for controlling two divided inflowing gas streams, one stream being passed over liquid volatile anesthetic to form a vapor and the other bypassed through a duct controlled by a temperature responsive bypass valve, said plate valve also controlling the outflow of gas-vapor mixture, said bypass valve having a resistance characteristic which is inconstant.

3,575,169

HYGIENIC MEDIUM APPLICATOR

Joseph A. Voss, Denver, Colo., and Carl W. Johnson, Neenah, Wis. Said Johnson assignor to said Voss

Filed Nov. 7, 1968, Ser. No. 774,095
Int. Cl. A61f *15/00*
U.S. Cl. 128—263 11 Claims



An hygienic medium applicator having an inner tube which telescopes within an outer tube to eject an hygienic medium carried therein, the outer surface of the outer tube having an arrangement of one or more elements secured thereto to enhance gripping and referencing of the applicator during use.

3,575,170

BREATHER ASSEMBLY FOR A SEALED CONTAINER

James L. Clark, Whitefish Bay, Wis., assignor to Plastronics Inc., Milwaukee, Wis.

Filed Feb. 14, 1969, Ser. No. 799,331
Int. Cl. A61f *5/44*
U.S. Cl. 128—275 5 Claims

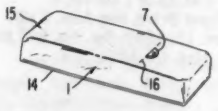
A breather assembly for a sealed container such as a bedside drainage bag comprising a breather element of woven fiberglass fabric material with a teflon coating adapted to permit free passage of gas therethrough and to resist passage of liquid therethrough. The breather element also acts to filter out bacteria in the air to thus prevent its entrance into the container. The breather element is mounted in a circular opening in a retaining ring member and permanently retained therein by a pair of outer housing members sealed by electronic welding to the retaining ring member. The assembly is then mounted in the wall of a container such as a bedside drainage bag with the breather element positioned in alignment with a flow opening in the wall of the container.

3,575,171

DISPOSABLE SANITARY NAPKIN-BELT COMBINATION

Mafalda L. Rugen, 17 Crest Drive, Murray Hill, N.J.

Filed Jan. 15, 1969, Ser. No. 791,450
Int. Cl. A61f *13/16*
U.S. Cl. 128—289 3 Claims



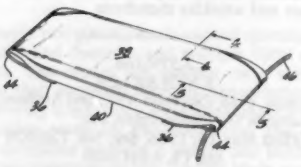
A sanitary napkin having an elastic strand attached thereto to serve as a belt is packaged as a disposable unit. The strand is provided with a buckle whereby the wearer may secure the ends of the strands together to form a sanitary napkin-supporting belt around her waist. The unit is packaged by enveloping it with a plastic sheet having a slot. A portion of the buckle is pulled through the slot to expose it outside the package, whereby the exposed portion serves as a tab to sever the wrapping and open the package.

3,575,172

SANITARY PADS WITH END LOOPS FOR STRINGS

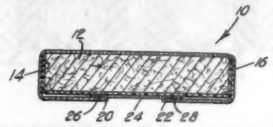
Ruth Joa Kiela, 411 Ridge Court, Kohler, Wis.

Filed Nov. 6, 1968, Ser. No. 773,849
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 3 Claims



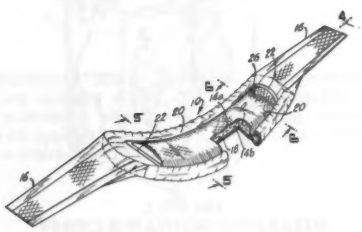
Disclosed herein is an absorbent pad having a pulp filler encased within a wrapper or envelope which extends outwardly from each end of the filler forming end tabs with the end tabs heat sealed onto the wrapper by the thermoplastic material used in forming the wrapper or envelope and a string or cord provided in the loop formed by the end tabs.

3,575,173
FLUSHABLE DISPOSABLE ABSORBENT PRODUCTS
Michael Loyer, South Somerville, N.J., assignor to Personal Products Company
Filed Mar. 13, 1969, Ser. No. 807,780
Int. Cl. A61f 13/16
U.S. Cl. 128—290 10 Claims



A body fluid absorptive and retentive product, such as a sanitary napkin, having an absorbent core and a waterproof moisture barrier, is wrapped in a wrapper material comprising a cover and a water-soluble or water-dispersible material which (1) maintains the structural stability of the absorbent product during use, and (2) is capable of disintegration upon subsequent treatment with water, whereby it may be disposed of readily and safely, such as by flushing in an ordinary water closet or toilet bowl.

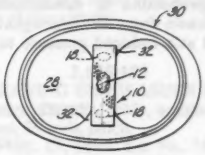
3,575,174
SANITARY NAPKIN
Ernest Mogor, North Brunswick, N.J., assignor to Personal Products Company
Filed July 11, 1969, Ser. No. 840,962
Int. Cl. A61f 13/16
U.S. Cl. 128—290 6 Claims



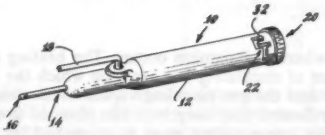
A sanitary napkin which is formed in either a curved or flat configuration, tapered toward its rearward end, and is maintained in its shaped configuration by deep embossed channels impressed through the cover and into the core of the napkin to compression bond the two components together. The deep embossed channels are positioned near the lateral and end edges on the top surface of the napkin and at the rearward end on the bottom surface of the napkin.

3,575,175
REMOVABLE PROTECTIVE LINER FOR NETHER GARMENTS
Mary H. McGuire, East Brunswick, N.J., assignor to Personal Products Company
Filed Aug. 11, 1969, Ser. No. 848,812
Int. Cl. A61f 13/16
U.S. Cl. 128—290 9 Claims

A protective liner which is temporarily, but securely, held to the interior crotch portion of nether gr garments by double-faced, pressure sensitive adhesive labels provided on the under surface of the liner. The adhesive label possesses differential adhesion levels such that the adhesive layer that secures the label to the protective liner possesses a greater level of adhesion so as to permanently adhere the label thereto, than does the adhesive layer of the label that temporarily, but securely, adheres the label and the liner to the crotch portion of the nether garment.



3,575,176
RECHARGEABLE CRYOSURGICAL INSTRUMENT
Ralph E. Crump, Trumbull; Frank L. Reynolds, Monroe, and Victor A. Thyberg, Fairfield, Conn., assignors to Frigitronics of Conn. Inc., Bridgeport, Conn.
Filed Oct. 21, 1968, Ser. No. 769,065
Int. Cl. A61b 17/36; F25d 3/00
U.S. Cl. 128—303.1 9 Claims



This disclosure relates to a rechargeable cryosurgical instrument having operating mechanism located at one end and a refrigerant cartridge-receiving chamber opening to the atmosphere at its other end. A removable end cap closes the open end of the instrument and is selectively positionable to locate a housed refrigerant cartridge in a dispensing or conserving position. In the dispensing position of the end cap, the pressurized refrigerant is dispensed from the cartridge through a delivery tube to a boiler valve located adjacent a cooling tip to reduce the temperature of the tip. The spent refrigerant is exhausted from the housing through an opening in the removable end cap. A selectively operable finger-actuable lever located at the exterior of the housing operates the boiler valve to either cool or warm the cooling tip.

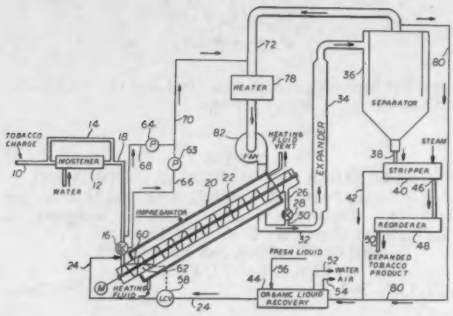
3,575,177
SMOKING PRODUCT OF CELLULOSIC MATERIAL SUBJECTED TO A NITROGEN DIOXIDE OXIDATION AND A MILD OXIDATION WITH PEROXIDE
Theodore S. Briskin, and Geoffrey R. Ward, Beverly Hills, Calif., assignors to Sutton Research Corporation, Los Angeles, Calif.
Continuation-in-part of application Ser. No. 595,622, Nov. 21, 1966, Continuation-in-part of application Ser. No. 674,994, Oct. 12, 1967. This application July 17, 1968, Ser. No. 745,402
Int. Cl. A24b 15/00
U.S. Cl. 131—2 11 Claims

The preparation of a smoking product formulated of a cellulosic material which has been oxidized in the presence of nitrogen dioxide and in which the oxidized product is subjected to a second mild oxidation reaction with a dilute peroxide solution, with or without previous reduction with borohydride.

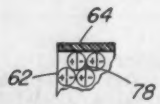
3,575,178
A PROCESS FOR INCREASING THE FILLING CAPACITY OF TOBACCO
Grant Mathews Stewart, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Mar. 13, 1969, Ser. No. 806,967
Int. Cl. A24b 03/18
U.S. Cl. 131—140 18 Claims

A process of increasing the filling capacity of tobacco is provided in which tobacco and an impregnating organic liquid are contacted in one zone and contact of the tobacco

with vapors of the liquid is continued in another zone until the tobacco is thoroughly impregnated. The impregnation is carried out at moderately elevated temperatures and pressures. After impregnation is substantially complete, the tobacco is withdrawn from the impregnating zone and immediately heated at a reduced pressure to an elevated temperature whereby expansion occurs. The heating is effected in a stream of circulating hot gas from which the tobacco is separated and the gas including vapors of the impregnating liquid are heated and recycled. The flow of impregnating fluid to the impregnating zone is controlled by the liquid level of the body of liquid impregnating fluid maintained in the impregnating zone.



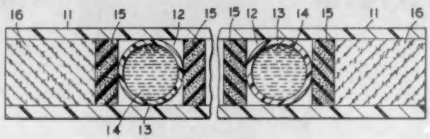
3,575,179
TOBACCO SMOKE FILTER
John H. Troll, 2305 Andrews Ave., Bronx, and Alan N. Aldern, 88 Remsen St., Brooklyn, N.Y.
Original application Apr. 27, 1967, Ser. No. 634,196, now Patent No. 3,463,168. Divided and this application May 21, 1968, Ser. No. 739,965
Int. Cl. A24f *07/04*
U.S. Cl. 131—262 **1 Claim**



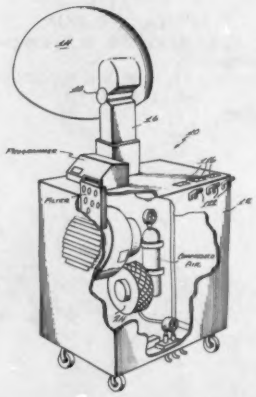
A tobacco smoke filtering means having passageways through which the smoke passes, the passageways being defined by substantially spherical dielectric particles each of which is electrostatically charged so as to manifest a positive charge on one side and a negative charge on its opposite side.

3,575,180
WATER-REACTIVE FILTER ELEMENT FOR SMOKING DEVICES
Margaret F. Carty, Plainfield, Vt., assignor to The H-2-O Filter Corporation, New York, N.Y.
Filed Aug. 7, 1968, Ser. No. 750,902
Int. Cl. A24f *07/04, 25/02*
U.S. Cl. 131—264 **1 Claim**

A filter element for smoking articles such as cigarettes, cigars and pipes, wherein a resilient, waterproof housing is enclosed at the ends by means of smoke permeable material. An alternating arrangement of a plurality of frangible containers partially filled with water, and a plurality of bodies compressed water reactive sponge filtering material of such a nature as to expand rapidly upon contact with water, is located within the housing. The diameter of each of the compressed bodies is substantially equal to the inner diameter of the housing. Any adjacent pairs of frangible containers are in contact with a common compressed body therebetween. Upon the rupture of said containers, said containers collapse and break into small particles, releasing their contents into the compressed sponge filtering material which thereupon expands to occupy the space formerly occupied substantially equally by the compressed sponge filtering material and the containers. The sponge material thus moistened provides a smoker with increased smoking comfort and enjoyment because of the elimination of harshness in the smoke and the reduction of the temperature thereof.



3,575,181
HAIR-TREATING DEVICE
Richard E. Rudd, Rockville, Md. (1605 Garden St., Santa Barbara, Calif. 93101)
Filed Sept. 23, 1965, Ser. No. 489,631
Int. Cl. A45d *19/00*
U.S. Cl. 132—9 **12 Claims**



CLAIM 1. Hair-treating apparatus comprising: a headset having a crown, said headset being adapted to cover the hair and scalp area of the head of a person being treated, a plurality of brush means mounted for movement within said headset for contacting and treating hair on the head of a person, means for moving said brush means in a controlled pattern against the head of the person being treated, means for extending and retracting said brush means into and out of contact with the person's head, and dispensing means connected to the interior of said headset for selectively dispensing liquids to the hair being treated.

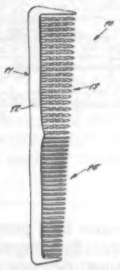
3,575,182
HEATING CLIPS FOR PERMANENT WAVING OF THE HAIR
Jean Leclabart, 53, Avenue Raymond Poincare, Paris, France
Filed Mar. 11, 1969, Ser. No. 806,182
Claims priority, application France, Mar. 26, 1968, 145,445
Int. Cl. A45d *2/36*
U.S. Cl. 132—36 **1 Claim**

The invention relates to improvements to heating clips for permanent waving, of the type comprising two halves connected by a spring forming the clip hinge, each half being provided with a heating [illegible] which a metal rod is in-

serted and acts as heat storage means. The invention is characterized in that each end of each of the two halves has a longitudinal retaining stop for the heating lining, each stop

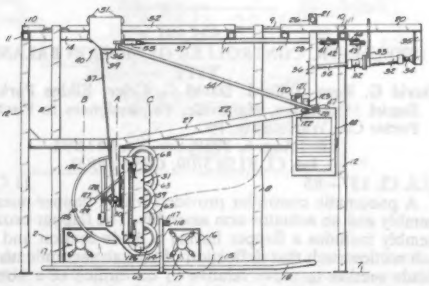
has an opening in which the metal rod of the lining engages by one of its ends to ensure that the lining is retained in the transverse direction.

3,575,183
PICKUP COMB
George Lee Tanner, Sr., P.O. Box 284, Dacula, Ga.
Filed Aug. 22, 1969, Ser. No. 852,222
Int. Cl. A45d *24/00*
U.S. Cl. 132—160 **1 Claim**



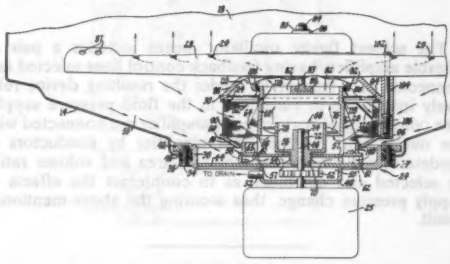
An improved comb for individual or professional use in haircutting and hair styling, the device comprising a comb which includes a plurality of teeth being serrated with grooves on opposite sides thereof, the grooves supporting the hairs in a desired spread out position.

3,575,184
VEHICLE WASHING APPARATUS
John H. Jurkens, Waunakee, Wis. (1061 Matador Ave., Albuquerque, N. Mex., 87100)
Filed Mar. 3, 1969, Ser. No. 803,839
Int. Cl. B60s *3/04*
U.S. Cl. 134—45 **25 Claims**



A vehicle washing apparatus utilizing high pressure liquid spray nozzles. The apparatus includes a pair of side banks, each incorporating a series of rotatable spray nozzles adapted to spray high pressure cleaning liquid against the sides of the vehicle, and a movable carriage carrying a series of spray nozzles is adapted to ride over the top of the vehicle as the vehicle moves through the apparatus to clean the front, top and rear surfaces of the vehicle.

3,575,185
SELF-CLEANING DISHWASHER STRAINER
Daniel J. Barbulesco, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 23, 1968, Ser. No. 769,918
Int. Cl. B08b *3/02*
U.S. Cl. 134—104 **2 Claims**

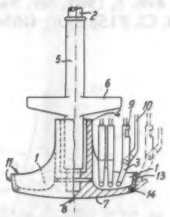


In preferred form, a domestic dishwasher including an improved self-cleaning strainer which removes food particles from washing fluid during its recirculation in a wash phase of operation. It includes an annular screen supported by a fluid distributing rotatable spray bar for rotation therewith and in surrounding relationship to a recirculating pump intake to prevent the entrance of food particles therethrough. A portion of the pump's output is diverted from the spray bar and directed by a stationary deflector plate through the revolving screen to backflush particles from the screen to prevent clogging. A drain pump with its inlet located below the screen removes both wash water and food particles from the dishwasher during a drain cycle.

ERRATUM

For Class 134—168 see:
Patent No. 3,575,729

3,575,186
UMBRELLA HANDLE
Heinz Seitel, Solingen-Ohligs, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed Mar. 13, 1969, Ser. No. 806,990
Claims priority, application Germany, Mar. 18, 1968, P 16 32 501.2
Int. Cl. A45b *25/12*
U.S. Cl. 135—44 **6 Claims**



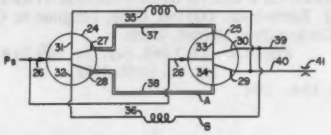
The umbrella handle is of the type generally known as having a flat cross-sectional shape when the umbrella is collapsed in a stowed position and normally includes a telescopic stick with collapsible dome-ribs. The handle includes seats for seating the ends of the dome-ribs and retaining them in a closed position; a portion of the dome ribs seats being displaceably mounted to allow the dome ribs to pivot outwardly of the seats when the umbrella is opened.

3,575,187

FLUIDIC PRESSURE-INSENSITIVE OSCILLATOR

Trevor G. Sutton, Tempe, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed June 13, 1968, Ser. No. 736,787
Int. Cl. F15c *1/08*
U.S. Cl. 137—81.5 **6 Claims**



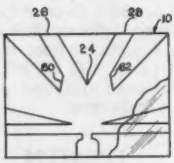
The subject fluidic oscillator means includes a pair of bistable amplifiers having feedback control lines selected and connected in a manner to render the resulting device relatively insensitive to variations in the fluid pressure supply. The control signal ports of each amplifier are connected with the output ports of the other amplifier by conductors of predetermined differential length-to-area and volume ratios so selected and combined as to counteract the effects of supply pressure change, thus securing the above-mentioned result.

3,575,188

PROPORTIONAL FLUIDIC AMPLIFIER

Charles J. Ahern, Sidney, N.Y., assignor to The Bendix Corporation

Filed Jan. 27, 1969, Ser. No. 794,064
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 **1 Claim**



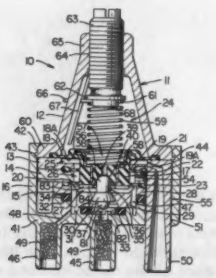
A proportional amplifier having tapering channel means to prevent overdrive and subsequent fluid loss thereby providing a fluidic element whose output pressure curve demonstrates a hard saturation characteristic.

3,575,189

PNEUMATIC CONTROL SYSTEM AND PNEUMATICALLY OPERATED REVERSING RELAY CONSTRUCTION THEREFOR OR THE LIKE

Larry S. Smith, Goshen, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 3, 1969, Ser. No. 796,073
Int. Cl. F15b *5/00*; **G05d** *16/00*
U.S. Cl. 137—85 **20 Claims**



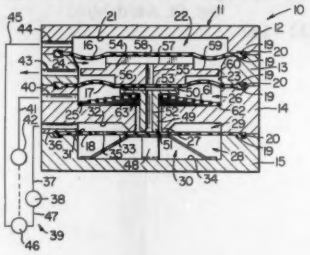
This disclosure relates to a reversing pneumatic relay construction comprising a housing carrying a one-piece diaphragm member having three spaced diaphragm portions disposed in stacked relation that cooperate with the housing to define a branch pressure chamber, a pilot pressure chamber and an exhaust chamber in stacked relation with the housing having a stationary valve seat for interconnecting a main pressure chamber and the branch chamber together. The diaphragm member is adapted to open and close the valve seat and has an opening passing therethrough for interconnecting the branch chamber and the exhaust chamber together. A movable valve member for opening and closing the stationary valve seat is disposed in the main chamber and projects through the valve seat into the branch chamber for controlling the opening passing through the diaphragm member.

3,575,190

PNEUMATIC CONTROL SYSTEM AND PNEUMATIC RELAY FOR THE SAME OR THE LIKE

Louis M. Puster, and Edward N. Caldwell, Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 10, 1969, Ser. No. 805,531
Int. Cl. F15b *5/00*; **G05d** *16/00*
U.S. Cl. 137—85 **20 Claims**



This disclosure relates to a pneumatic relay comprising a housing carrying three diaphragms in stacked relation that cooperate therewith and define a main pressure chamber, a branch pressure chamber, an exhaust chamber and a pilot pressure chamber in stacked relation with the housing having a stationary valve seat for interconnecting the main chamber and the branch chamber together. One of the outboard diaphragms opens and closes the valve seat and the intermediate diaphragm has an opening therethrough for interconnecting the branch chamber and the exhaust chamber together. A movable valve member is disposed in the branch chamber and projects into the valve seat for controlling the opening in the intermediate diaphragm by preventing fluid communication between the branch chamber and the exhaust chamber when the valve member is engaged by both the intermediate diaphragm and the one outboard diaphragm and by permitting fluid communication between the branch chamber and the exhaust chamber when the valve member is not engaged by one of the one outboard diaphragm and the intermediate diaphragm.

3,575,191

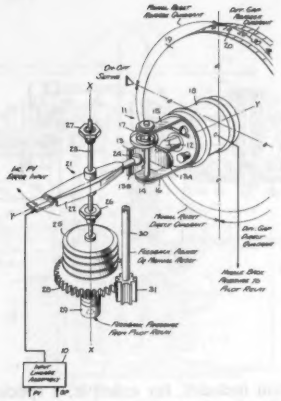
PNEUMATIC CONTROLLER OF MOTION BALANCE TYPE

David G. Rees, Telford; David G. Grier, Elkins Park, and Daniel Meiklejohn, Hartsville, Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Filed Aug. 6, 1969, Ser. No. 847,991
Int. Cl. F15b *5/00*; **G05d** *16/00*
U.S. Cl. 137—85 **11 Claims**

A pneumatic controller provided with a flapper-nozzle assembly and an actuator-arm assembly. The flapper-nozzle assembly includes a flapper having a blade section and a flat tab section such that deflection of the tab section causes the blade section to move relative to the orifice of a nozzle to more or less throttle the rate of fluid flow through the nozzle. The flapper-nozzle assembly is rotatable, whereby the angular orientation of the plane of the tab section may be varied with respect to a Y-axis passing through the nozzle. The actuating-arm assembly includes a swizzle stick mounted on a

transverse staff extending along an X-axis perpendicular to the Y-axis, the swizzle stick having a ball at one end thereof engaging the tab section of the flapper. The stick is caused to swivel on the staff about the X-axis as a function of an applied error signal motion, and is also caused to shift along the



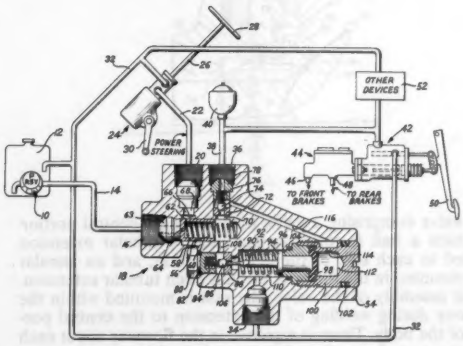
X-axis as a function of a feedback signal motion whereby the position of the ball is the resultant of the error and feedback signals, and the degree to which it deflects the tab section of the flapper depends on the angle of this section with respect to the Y-axis.

3,575,192

VEHICLE HYDRAULIC SYSTEM AND PRESSURE REGULATOR THEREFOR

Stanley I. MacDuff, South Bend, Ind., assignor to The Bendix Corporation

Filed Jan. 27, 1969, Ser. No. 794,091
Int. Cl. G05d *11/00*
U.S. Cl. 137—116 **3 Claims**



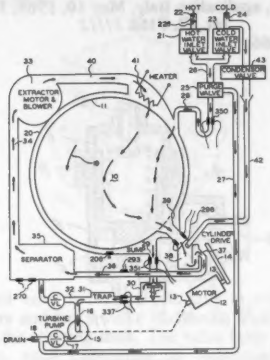
A hydraulic system for a vehicle having a conventional open-center steering system powered by an engine-driven rotary pump with a valve that enables a small portion of the fluid delivered by the pump to be stored in an accumulator between predetermined pressure limits. The invention visualizes the use of the fluid in the accumulator for such purposes as actuating a power brake booster and/or other devices within the vehicle.

3,575,193

TOTAL SENSING COMBINATION WASHER-DRYER

Anthony Niewyk, Saint Joseph, and Donald E. Janke, Benton Harbor, Mich., assignors to Whirlpool Corporation

Filed May 20, 1968, Ser. No. 730,358
Int. Cl. D06f *39/08*; G05d *7/06*
U.S. Cl. 137—119 **1 Claim**



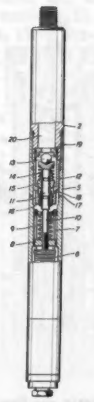
A semielectronic control system for a combination washing and drying machine utilizing a solenoid-actuated stepping switch, each successive position of the switch controlling such functions as water fill, agitate, drain, extract, and dry making up the washer-dryer's cycle of operation. Energization of the solenoid is controlled either by RC timer circuitry having a number of selective delays or by circuitry responsive to sensed conditions. The stepping switch selects the appropriate delay in the RC timing circuitry or the proper condition responsive circuit which causes energization of the solenoid to advance the stepping switch to the next position.

3,575,194

GAS-LIFT VALVE

Everett D. McMurry, Houston, Tex., assignor to McMurry Oil Tools, Inc., Houston, Tex.

Filed July 11, 1969, Ser. No. 841,046
Int. Cl. F04f *1/18*
U.S. Cl. 137—155 **15 Claims**

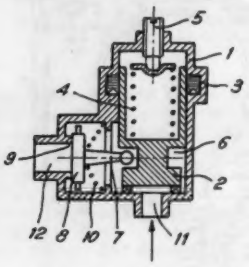


An improved form of gas-lift valve apparatus is provided, wherein the check valve portion is relocated upstream of the main shutoff components, relative to injection gas input, to eliminate trapping low pressure between the main shutoff and check valve components. Adjustment means is also provided for selectively adjusting the compression force supplied by the load spring on the main valve stem to permit adjustment of the operating pressure range to correspond with borehole depth and other environmental factors.

3,575,195
VALVE DEVICE FOR INTERCEPTING FAULTY CIRCUITS IN PNEUMATIC PLANTS WITH A PLURALITY OF CIRCUITS

Giuseppe Alfieri, Milan, Italy, assignor to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy

Filed May 12, 1969, Ser. No. 844,693
Claims priority, application Italy, May 10, 1968, 16321A/68
Int. Cl. F16k *31/12*
U.S. Cl. 137—266 4 Claims

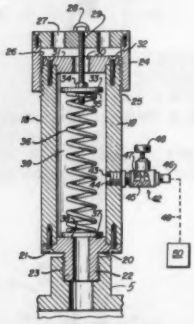


A valve device for use in a pneumatic plant having several utilization circuits fed by a single compressor through a single regulator, which device serves to isolate a faulty circuit. The valve device comprises a piston controlled shutoff valve. The piston is spring biased to a valve-closed position and is moved against the spring bias to a valve-open position by normal operating pressure. A drop from normal operating pressure causes the piston to close the valve thereby isolating the faulty circuit.

3,575,196
CLOSED EXHAUST DISCHARGE SYSTEM FOR ANESTHESIA MACHINES

Rocco Anthony Marrese, 1024 N. Belleforte Ave., Oak Park, Ill., and William T. O'Sullivan, 1323 Asland, River Forest, Ill.

Filed Jan. 10, 1969, Ser. No. 790,372
Int. Cl. A61m *17/00*
U.S. Cl. 137—312 8 Claims

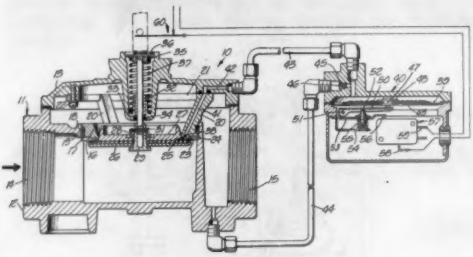


A relief valve for anesthetic gas line which is spring loaded to conventionally discharge overloading anesthetic gas into the surrounding atmosphere, and which further is provided with a valve assembly for connection to a closed system so that the overloading anesthetic gas is retained with the closed system and is not discharged to the surrounding atmosphere. The open system of the valve is maintained by making the spring loaded valve operational, and the closed system is effected by closing the spring loaded valve so that overloading anesthetic gas is directed through the valve assembly into the closed system, preferably a surgical room vacuum line.

3,575,197
VALVE LEAK DETECTOR

William A. Ray, North Hollywood, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 27, 1969, Ser. No. 837,286
Int. Cl. F16k *25/00, 37/00*
U.S. Cl. 137—312 10 Claims

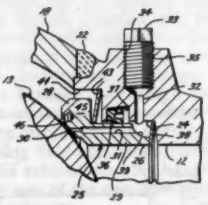


The invention includes, for example, a special main line gas shutoff valve for the main burner of a gas furnace. The valve has two seats. Means are then provided to detect gas leakage into the space between seats. Preferably, a pressure switch is actuated to prevent main burner ignition if a gas leak is detected.

3,575,198
ESTABLISHMENT OF A SEAL BETWEEN CONCENTRIC SURFACES IN A HIGH TEMPERATURE ENVIRONMENT

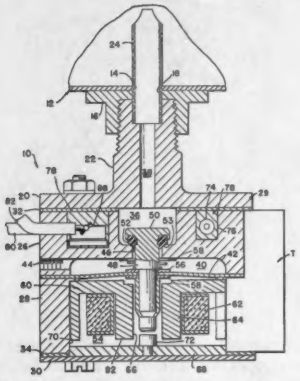
Frank V. Ellis, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Nov. 22, 1968, Ser. No. 778,283
Int. Cl. F16k *27/10, 3/36*
U.S. Cl. 137—315 5 Claims



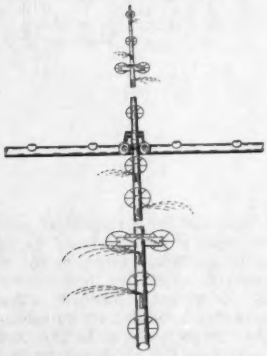
A valve comprising a valve body having a central portion in which a ball is rotatably mounted, a tubular extension welded to each side of the central portion, and an annular seat mounted in the flowway through each tubular extension. In the assembly of the valve, the seat is mounted within the flowway during welding of the extension to the central portion of the body. There is a groove in the flowway about each valve seat, and a sealing ring is carried within each groove. The ring is of a material such as Teflon which, if confined against expansion while heated due to its proximity to the weld between the body portions, would reform into a different, nonsealing shape when cooled to ambient temperature. The base of the groove is deeper at one end than at the other and wider than the seal ring, so that said ring is relatively loosely received within the deeper end of the groove and relatively tightly engaged between the seat and the shallower end of the groove. The seal ring is arranged within the deeper end of the groove during welding and then moved into the shallower end thereof when the ring is cooled.

3,575,199
AUTOMATIC CONDENSATE VALVE
Henry C. Beattie, Marine City, Mich., assignor to Reef-Baker Corporation, East Detroit, Mich.
Continuation-in-part of application Ser. No. 753,663, Aug. 19, 1968, now abandoned. This application Nov. 4, 1968, Ser. No. 773,066
Int. Cl. F16k *49/00, 31/06*
U.S. Cl. 137—341 4 Claims



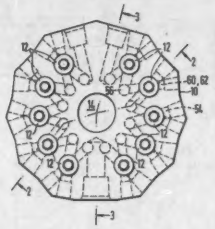
The automatic condensate valve includes a housing having a chamber for the accumulation of liquid, and a valve member normally closing an outlet from the chamber. Electromagnetic means are provided including an actuator for opening the valve member at predetermined intervals of time.

3,575,200
IRRIGATION APPARATUS AND SYSTEM
James G. Imeson, Box 632, Jackson, Wyo. 83001
Filed July 31, 1968, Ser. No. 749,020
Int. Cl. B05b *9/02;* E01h *3/02*
U.S. Cl. 137—344 8 Claims



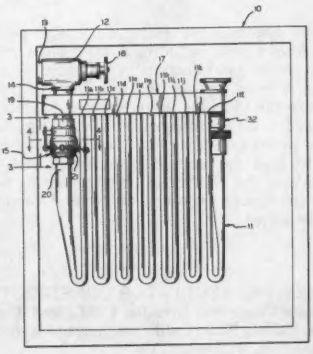
An irrigation apparatus or system comprising a self-propelled vehicle with a water delivery pipe for discharging water therethrough to a field to irrigate it, which delivery pipe is provided with capping means for operatively connecting the water delivery pipe to riser bowl means disposed at spaced intervals along a fixed water supply pipe in the field to be irrigated.

3,575,201
MULTIPLE HYDRAULIC VALVE UNIT
John G. MacDonald, and George S. Morley, Goderich, Ontario, Canada, assignors to The Dominion Road Machinery Co. Limited
Filed Feb. 5, 1969, Ser. No. 796,714
Int. Cl. E01h *1/00*
U.S. Cl. 137—352 2 Claims



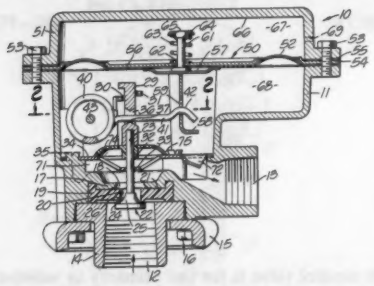
The control valve is for use primarily in vehicles such as motor graders and has a valve body with a central aperture surrounding the steering shaft. The valve body has a number of chambers, each containing an individual valve spool operated by a manual lever, each valve spool having a pair of necked portions with end lands and a middle land. Each chamber has an inlet port and, inward of the end lands, a pair of exit ports which are connected by passages in the valve body to the inlet port of the next valve chamber. Each chamber also has a pair of cylinder ports, inward of the exit ports, adapted for connection to a double-acting pressure cylinder through a conventional lock valve. Movement in either direction of a selected valve spool from the neutral position where fluid is directed equally to the exit ports causes one of the end lands to close the nearest exit port, and the middle land then directs fluid out through the cylinder port located adjacent to the closed exit port into the cylinder and back through the other cylinder port, then through the other exit port into the passage and to the next valve chamber. A particular feature of the valve body is that all the ports and passages in the valve body may be formed of connecting holes drilled from the exterior surface of the valve body.

3,575,202
HOSE RACK SAFETY VALVE DEVICE
Joseph J. Turek, Riverside, Ill., assignor to W. D. Allen Manufacturing Co., Broadview, Ill.
Filed Aug. 14, 1969, Ser. No. 850,192
Int. Cl. A62c *35/20*
U.S. Cl. 137—355.18 5 Claims



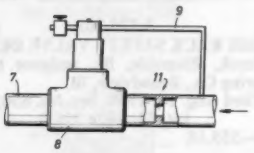
A safety valve device for use with fire hose mounted on a rack to control the water supply to the hose, wherein following removal of the hose from the rack and jerking of the last part of the hose therefrom pulls a chain connected to the safety valve for opening same to connect the water supply to the hose.

3,575,203
PRESSURE REGULATOR DEVICE
Dwight N. Johnson, Anaheim, Calif., assignor to The Singer Company
Filed Apr. 1, 1968, Ser. No. 717,790
Int. Cl. F16k *17/34, 15/14*
U.S. Cl. 137—484.8 11 Claims



A fluid pressure regulator employs a flexible disc with a central passage, together with an axially movable nonresilient valve member in the passage to control flow through the passage as the disc flexes under changes in differential pressure. A coil torsion spring has a laterally projecting arm connected to the valve member and to a flexible diaphragm assembly responsive to pressure at the outlet of the regulator device. A pressure-sensitive limiter device cooperates with the valve member to control pressure reduction under the diaphragm assembly to a value below outlet pressure to make up for loss in reference spring force as the regulator strokes open.

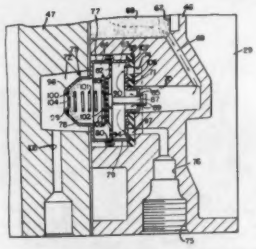
3,575,204
FAIL-SAFE ASSEMBLY FOR GAS-LIFT PRODUCTION SYSTEMS
Everett D. McMurry, Houston, Tex., assignor to McMurry Oil Tools, Inc., Houston, Tex.
Filed July 22, 1969, Ser. No. 843,698
Int. Cl. F16k *17/30*
U.S. Cl. 137—498 11 Claims



A fail-safe system is provided for use with gas-lift production of oil from a well, including a novel blocking valve actuable to interrupt gas injection in response to an excessive pressure differential in the injection line. In particular, the valve stem in the blocking valve is spring-loaded open and is also arranged to be urged open by the low pressure side of a differential upstream in the flow line. A pneumatic piston is arranged to urge the stem into the valve seat by the high pressure side of the differential, but the spring is selected to exceed the normally expected differential between the low and high pressures.

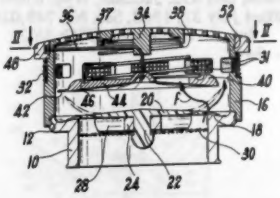
3,575,205
PRESSURE REGULATOR CONSTRUCTION
Michael John Caparone, Arcadia, Calif., and Theodore John Dykzeul, Rolling Hills, Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Original application Oct. 22, 1965, Ser. No. 509,675, now Patent No. 3,441,049, dated Apr. 29, 1969, Original application Aug. 6, 1962, Ser. No. 214,903. Divided and this application Jan. 2, 1969, Ser. No. 800,319
Int. Cl. F16k *31/365*
U.S. Cl. 137—505.41 3 Claims

This disclosure relates to a self-contained pressure regulator that can be readily disposed in a housing means against a surface thereof having an inlet and an outlet respectively disposed in fluid communication with an inlet means and an outlet means of a pressure regulator, the pressure regulator comprising a cup-shaped casing having its closed end provided with its inlet means and outlet means and having its



opened end turned over to secure a flexible diaphragm thereto that cooperates with the casing to define a chamber that is in fluid communication with the inlet means and outlet means thereof while carrying a valve member that controls the inlet means thereof.

3,575,206
EXHALATION DEVICE FOR BREATHING MASK
Paul Ulmann, Bagnols-sur-Ceze, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed July 7, 1969, Ser. No. 839,243
Claims priority, application France, July 11, 1968, 158,752
Int. Cl. A62b *23/02*
U.S. Cl. 137—529 6 Claims

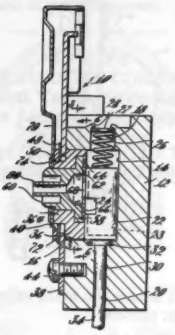


An exhalation device for a respiratory mask comprises a valve member which is biased toward its seat by its own resiliency and by additional spring means which may optionally be rendered inoperative by a releasing mechanism. The mechanism comprises a manually actuatable member such as a control ring, knob or lever movable on the canister of the device to a position where a flexible cord connected to the member exerts on the additional spring a force which prevents it from acting on the valve member.

3,575,207
PROPORTIONING VALVE
John A. Denner, West Roxbury, and Robert D. Reis, Hingham, Mass., assignors to United Electric Controls Company, Watertown, Mass.
Filed Oct. 7, 1968, Ser. No. 765,423
Int. Cl. F16k *3/02*; F25b *41/04*
U.S. Cl. 137—556 12 Claims

A proportioning valve for use in a control system for vary-

ing the range of control and the level of operation within the



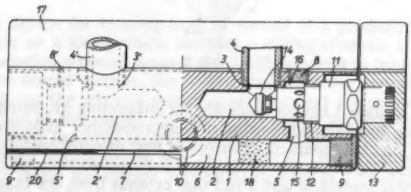
range.

3,575,208

WATER-DISTRIBUTING TAP

Claude Urban, Buvingen 27, Pepingen, Belgium

Filed May 6, 1969, Ser. No. 822,131
Claims priority, application Belgium, May 17, 1968, 58607
Int. Cl. F16k *11/22*
U.S. Cl. 137—606 15 Claims



The tap comprises a body of constant profile with a first longitudinal bore closed at both ends and connected to a water outlet preferably formed by a longitudinal slot in said bore, and with a second longitudinal bore parallel thereto, which is connected by a transverse passage to a water supply, is closed at one end and has a valve assembly arranged axially within its other end and provided with a handle located at the end of the tap body to control the communication between the second longitudinal bore and a transverse passage connecting it to the first longitudinal bore.

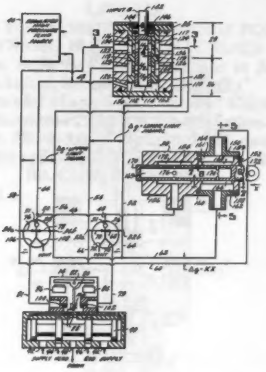
3,575,209

FLUIDIC POSITION LIMIT CONTROL

Howard B. Kast, Fairfield, Ohio, assignor to General Electric Company

Filed Feb. 24, 1969, Ser. No. 801,290
Int. Cl. F16k *11/14*; F15c *3/00*
U.S. Cl. 137—609 16 Claims

A position limit control for incorporation into a feedback control system is disclosed which includes an actuator for positioning a control element and wherein it is desirable to provide variable limits on the minimum and maximum position of the actuator. The position limit control comprises function generators for providing fluidic upper limit and lower limit signals, a feedback transducer for providing a fluidic signal proportional to actuator position, means for placing the actuator position signal and the lower limit signal in opposition with each other across the control ports of a first fluid amplifier, means for placing the actuator position signal and the upper limit position signal in opposition with each other across the control ports of the second fluid amplifier, and means for overriding the closed loop control system with the output signals from the said fluid amplifiers. Also disclosed are a unique fluidic function generator for providing a fluidic differential pressure signal and specific override means.

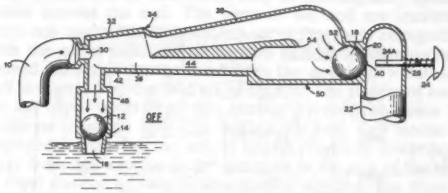


3,575,210

AUTOMATIC REFILL DEVICE HAVING FLUIDICALLY OPERATED CONTROL

Theodore J. Fussell, Bound Brook, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Oct. 28, 1968, Ser. No. 771,064
Int. Cl. F17d *1/00*; F15c *3/06*
U.S. Cl. 137—608 16 Claims



A refill mechanism, for example, a water closet tank refill apparatus, having a valve which maintains itself in the "on" position once the fluid flow starts and switches to the "off" position in response to the attainment of a predetermined liquid level.

3,575,211

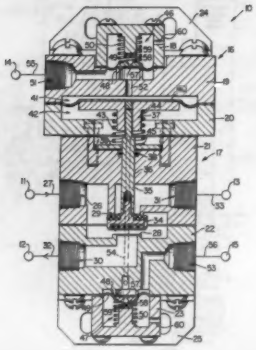
PNEUMATIC CONTROL SYSTEM AND RELAY VALVE CONSTRUCTION THEREFOR OR THE LIKE

Joseph P. Wagner, Knoxville, Tenn., assignor to Robertshaw Control Company, Richmond, Va.

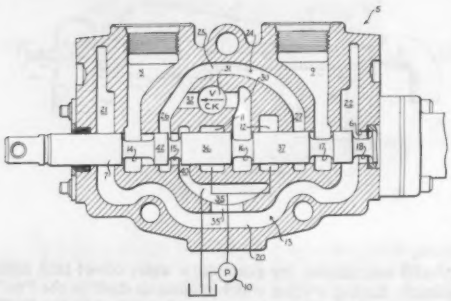
Filed June 23, 1969, Ser. No. 835,395
Int. Cl. F16k *31/365*
U.S. Cl. 137—625.5 8 Claims

A relay valve construction comprising a housing means having an inlet and a pair of outlets respectively interconnected to the inlet by a pair of valve seats controlled in an alternate manner by a valve member interconnected to a diaphragm means which is normally biased to one position thereof by a spring means and is adapted to be moved to another position thereof by a first pilot valve means directing a pilot pressure signal against one side of the diaphragm means, a second pilot valve means being provided for direct-

ing a canceling pilot pressure signal against the other side of the diaphragm means to move the same back to its one position in opposition to the force of the first-named pilot signal to thereby cancel the effect thereof.



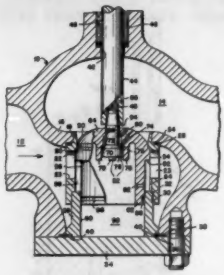
3,575,212
LEAKAGE CONTROL FOR CLOSED CENTER VALVES
Raud A. Wilke, Brookfield, Wis., assignor to Koehring Company, Milwaukee, Wis.
Filed Nov. 3, 1969, Ser. No. 873,521
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.69 **18 Claims**



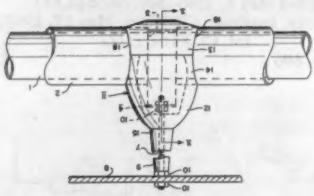
A hydraulic control valve wherein pressure fluid which leaks along the exterior of the movable valve element from a high pressure inlet zone is intercepted before it reaches any service passage of the valve and conducted along a path externally of the valve element to a low pressure return passage in the valve body.

3,575,213
CONTROL VALVES WITH BALANCED ACTION
Ira H. Schnall, Lake City, Pa., assignor to Blaw-Knox Company, Pittsburgh, Pa.
Filed Oct. 4, 1968, Ser. No. 765,141
Int. Cl. F16k *11/16*
U.S. Cl. 137—630.13 **8 Claims**

A control valve having a balanced action whereby a small valve is operable to provide communication between the downstream side of the main valve member and a balancing chamber on the upstream side of the main valve member to balance the pressures across the main valve member and permit ease of movement thereof.

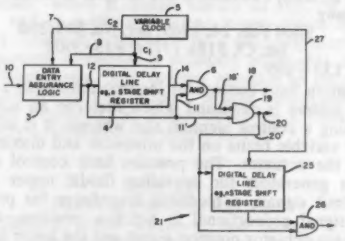


3,575,214
INSULATED HANGER ASSEMBLY
Jerome E. Bindel, 6208 Meadowbrook Ave., Cleveland, Ohio
Filed June 12, 1969, Ser. No. 832,595
Int. Cl. F16l *3/08*
U.S. Cl. 138—107 **9 Claims**



An insulated hanger assembly for supporting an insulated pipe or the like, comprising a hanger member including a metal bracket, adapted to surround and directly contact an exposed, bared section of the pipe between sections of conventional insulation and a rod that extends from the bracket to secure it to a support. A premolded, insulating shell encompasses at least a part of the rod or other interconnecting means and extends around at least part of the strap, to cover and insulate such parts. Also the shell is shaped to fit adjacent the bared section of the pipe to insulate it, and preferably overlaps and engages contiguous portions of the conventional pipe insulation.

3,575,215
PULSE TRAIN EXTRACTOR SYSTEM
Ronald J. Boddy, Monte Sereno, Calif., assignor to Sylvania Electric Products Inc.
Filed Sept. 30, 1968, Ser. No. 763,675
Int. Cl. H03k *13/00*
U.S. Cl. 328—139 **5 Claims**



This system consists of a clock generator which controls the rate at which pulses of an incident pulse train are advanced through a shift register. The input to and the output of the shift register are logically combined in an AND gate.

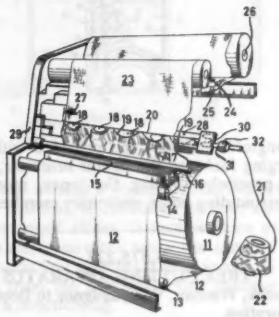
When the clock frequency is adjusted to be related to the pulse repetition frequency (*PRF*) of the pulses so that a pulse is in the last stage of the shift register at the same time that a succeeding pulse is received at the input thereof, the AND gate produces an output pulse. This operation is repetitive resulting in extraction of the pulse train.

3,575,216

DEVICE FOR FORMING COILS OF THREAD

Edgar H. Strauss, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works Ltd., formerly Caspar Honegger, Ruti, Switzerland

Filed Apr. 23, 1969, Ser. No. 818,737
Claims priority, application Switzerland, Apr. 30, 1968, 6442/68
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 **16 Claims**



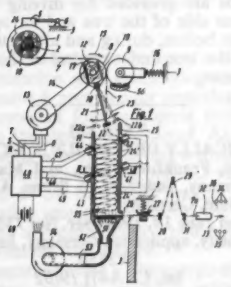
A device for forming coils of thread of a predetermined length on a loom, which includes a coiling element, a rotor for winding a thread around the coiling element to form coils of the thread thereon, the coiling element being mounted to rotate on the rotor, a retaining arrangement for preventing rotation of the coiling element and a means for periodically displacing the coils of thread along the coiling element. The retaining arrangement has two separate retaining means which retain and release the coiling element in a mutually alternating manner so that during the displacement of the coils over the retaining zone of one retaining means, it is positioned or moved away from its retaining zone and the other retaining means is positioned to retain the element.

3,575,217

DEVICE FOR STORING WEFT MATERIAL IN WEAVING MACHINES

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Mar. 19, 1969, Ser. No. 808,396
Claims priority, application Switzerland, Mar. 21, 1968, 4209/68
Int. Cl. D03d *47/34*
U.S. Cl. 139—122 **21 Claims**



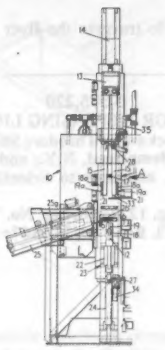
The storage container is situated between the bobbin and the shed of the weaving machine to permit laying up of the weft material for subsequent picking into the shed. The container can be vertically arranged or curved and can be subjected to an internal airstream for guiding of the weft material through the box.

3,575,218

MACHINES FOR FORMING WINDINGS FOR USE IN DYNAMO ELECTRIC MACHINES

Kenneth Preece, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation-in-part of application Ser. No. 628,054, Apr. 3, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 443,821, Mar. 30, 1965, now Patent No. 3,328,617. This application May 6, 1968, Ser. No. 726,802
Int. Cl. B21f *3/04*, *45/00*
U.S. Cl. 140—1 **26 Claims**



A machine for forming a wave-wound winding from conductive strip includes a forming station having a first set of fingers engageable with one axial end of a substantially helically wound coil of conductive strip at equiangularly spaced points around the coil. The turns of the coil are insulated from one another, and a second set of fingers is engageable with the other axial end of the coil at points equiangularly spaced from one another and from the points at which the coil is engaged by the first set of fingers. The fingers of each set are urged apart from one another by resilient means to positions in which they can engage the coil, and means is provided for moving the sets of fingers relatively towards or away from one another in the direction of the axis of the coil to bend the coil to form a wave-wound winding. The fingers of each set are mounted so as to permit inward movement of each finger against the action of said resilient means as the coil is bent, and the machine further includes means for returning the sets of fingers to their original position when the winding has been formed.

3,575,219

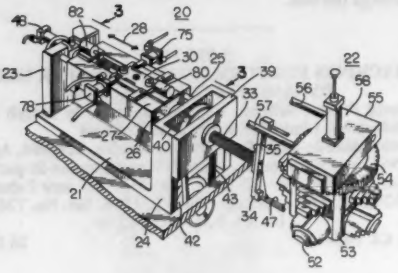
COIL WINDING APPARATUS AND METHOD

Robert J. Eminger, Fort Wayne, Ind., assignor to Essex International, Inc., Fort Wayne, Ind.

Continuation-in-part of application Ser. No. 717,819, Apr. 1, 1968. This application Mar. 19, 1969, Ser. No. 813,798
Int. Cl. B21f *3/04*
U.S. Cl. 140—92.1 **37 Claims**

Apparatus for winding coils on a coil form having a plurality of steps of progressively smaller size. A flyer is provided mounted on a shaft for winding an elongated strand on the steps to form the coils. A first support is provided for rotatably supporting the shaft and a drive is coupled to the shaft for rotating the same thereby to rotate the flyer. A second support is provided for supporting the first support for longitudinal movement parallel with the axis of the shaft. A first actuator is provided on the second support operably connected to the first support for longitudinally moving the first support and the shaft so as to position the flyer in winding relationship with the coil form steps. A second actuator is

provided operably connected to the second support for moving the same longitudinally thereby to move the first support



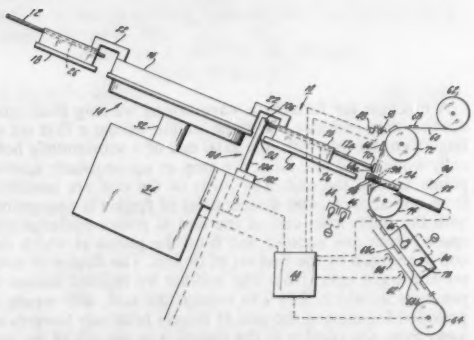
and the shaft so as to traverse the flyer with respect to the coil form.

3,575,220

APPARATUS FOR DISPENSING LIQUID SAMPLE

Robert Davis, Far Rockaway; Theodore Shlisky, Bayside, N.Y.; John Silverman, Hempstead, N.Y., and William Pipa, New Hyde Park, N.Y., assignors to Scientific Industries, Inc., Hempstead, N.Y.

Filed Aug. 12, 1968, Ser. No. 751,816
Int. Cl. B65b *43/50*; B67c *3/00*
U.S. Cl. 141—130 **20 Claims**



A concentrically rotatable circular disc having a plurality of spaced radially outwardly facing capillaries disposed on it; a receiving means, e.g., an elongated tape, to receive the contents of each of the capillaries in turn; each capillary being shifted, in turn, to a dispensing position where its contents may be blown out of the capillary onto the receiving means; and shifting means for shifting the receiving means toward and away from each capillary after the capillary has moved to its dispensing position, so that the contents of the capillary may be transferred to the receiving means; and timing and coordinating means for coordinating the movement of the receiving means with the movement of the disc supporting the capillaries and with the blower for emptying the capillaries.

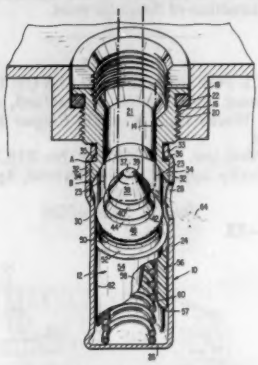
3,575,221

GAS LIGHTER FILLING VALVE

Soichi Mochizuki, Tokyo; Yoshio Kanamaru, Chiba-Ken, and Tamotsu Kuroiwa, Tokyo, Japan, assignors to Japan Gas Lighter Association, Tokyo, Japan

Filed Mar. 28, 1969, Ser. No. 811,391
Claims priority, application Japan, Nov. 9, 1968, 43/81677;43/81678
Int. Cl. F23q *2/52*
U.S. Cl. 141—295 **2 Claims**

A gas lighter filling valve capable of manufacture by mass production techniques and provided with a single passageway through which charging and venting occurs simultaneously, featuring a thermoplastic inner, movable member, characterized by toughness, retention of shape under stress, springiness and longterm stability, and provided with a furrow for jetting charging fuel into the lighter reservoir, together with means for precisely aligning the inner, movable member within its surrounding outer, stationary member.

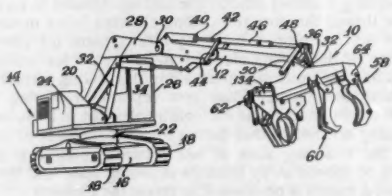


3,575,222

TREE CUTTING APPARATUS

Frank J. Tucek, Wausau, Wis., assignor to Drott Manufacturing Corporation

Filed Dec. 6, 1968, Ser. No. 781,899
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 **10 Claims**



Apparatus for cutting trees. The apparatus includes a support frame. A first arm is pivotally connected to the upper portion of the frame for engaging one side of a tree. A tree-engaging member is fixedly secured to the lower portion of the support frame and includes first and second outwardly extending tree-engaging portions. Means are provided for moving the first arm into spaced alignment with the first tree-engaging portion. Tree-cutting means are connected to the lower portion of the support frame. A second arm is pivotally connected to the support frame intermediate the first arm and the tree-engaging member for engaging the other side of the tree. Means are provided for driving the second arm against the other side of the tree and for applying constant pressure thereto before, during and after cutting the tree so as to maintain the tree under control of the tree-cutting apparatus at all times.

3,575,223

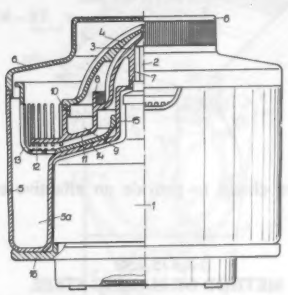
ELECTRICALLY DRIVEN JUICE EXTRACTOR

Gerhard Hickel, Frankfurt, Main, and Manfred Michaelis, Langen, Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Main, Germany

Filed June 19, 1968, Ser. No. 738,253
Claims priority, application Germany, June 23, 1967, B93150
Int. Cl. A47j *19/02*
U.S. Cl. 146—3 **10 Claims**

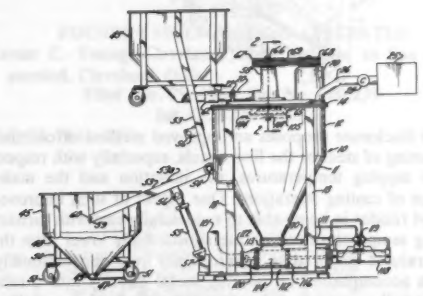
A juicer includes an electromotor having a rotatable drive shaft. A smaller first conical extracting member provided

with external ribs is connected with the drive shaft for rotation thereby. A removable larger second conical extracting member provided with external ribs is telescopable over the first extracting member to be connected therewith for rotation. The second extracting member is connected with the first extracting member if larger quantities of juice are to be extracted. Wall means defines an annular channel-shaped



first compartment arranged so that juice extracted by the first extracting member is collected therein, and a second compartment arranged either to receive juice extracted by the second extracting member when the same is connected with the first extracting member and is in use or to receive juice extracted from the first extracting member when the first receptacle is overflowing.

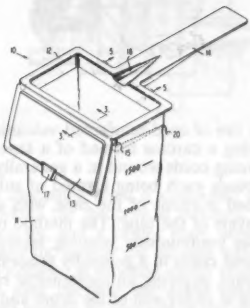
3,575,224
EMULSIFYING AND DEAERATING APPARATUS FOR SAUSAGE BATTER AND THE LIKE
Alvin W. Hughes, Bensenville, Ill., assignor to A. W. Hughes Company, Inc., Addison, Ill.
Filed Sept. 12, 1968, Ser. No. 759,432
Int. Cl. B02c *18/00*
U.S. Cl. 146—192 **9 Claims**



Apparatus for deaerating sausage batter and the like either alone or in combination with emulsifying treatment of the product where means is provided for centrifugally separating and removing unwanted foreign objects from the sausage batter incident to the deaeration thereof. An emulsifier assembly for deaerating apparatus having a rotatable sleeve including radially inwardly extending impeller vanes for rapidly imparting rotation to the batter and feeding it through the emulsifier. A rotating attenuator receives the batter ejected from the emulsifier and centrifugally thins out the batter for contact with the vacuum atmosphere.

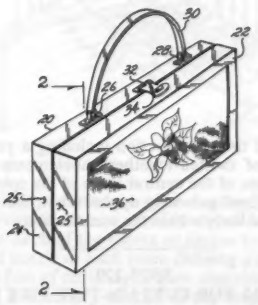
Deaerating apparatus having a piston-type discharge pump at the lower end of the machine which alternately reciprocates with a sliding valve arrangement so that material is pumped out of the vacuum chamber in a positive, continuous manner. A feedhopper arrangement having a discharge outlet at its lower end with means for elevating the hopper to the feed position, connecting the discharge outlet to the machine inlet and control means for starting and stopping the drive motor for the emulsifier associated with the feeding of the material from the hopper.

3,575,225
STERILE SPECIMEN CONTAINER FOR ATTACHMENT TO A SURGICAL TABLE AND FOR OTHER USES
Jane Curtze Muheim, 8601 Sundale Drive, Silver Spring, Md.
Filed Sept. 12, 1969, Ser. No. 857,408
Int. Cl. A61b *19/00;* **A47k** *11/12;* **B65d** *33/16*
U.S. Cl. 150—8 **13 Claims**



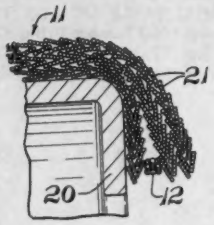
A heat-resistant, sterile specimen container having a rigid handle, a rigid hinged rim, and a flexible, transparent, graduated bag which is used as a collection and storage receptacle in surgery. The container may also be used in cooking prepackaged frozen foods. The receptacle bag portion is made of pliable heat-resistant plastic. The handle and rim support are made of hard heat-resistant plastic or of metal or of fiberboard.

3,575,226
ENSEMBLE-MATCHING HANDBAG
Betty M. Chapman, 15 Sherril Lane, Redlands, Calif. 92373
Filed Sept. 24, 1968, Ser. No. 762,099
Int. Cl. A45c *3/08*
U.S. Cl. 150—28 **2 Claims**



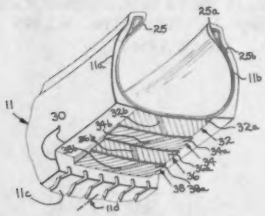
An ensemble-matching handbag having hinged sides which may be covered by multiple patterns or colored segments of similar wearing apparel which are clamped on the sides by surrounding frames that have the opposed clasp elements and carrying strap on their upper edges. A cloth tightening and holding side covering of sponge rubber or the like may be used. Interfitting indentations are provided on the sides and surrounding frames for securing these in assembled relation.

3,575,227
PNEUMATIC TIRE AND METHOD OF MAKING SAME
Donald R. Bartley, Cuyahoga Falls, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.
Filed May 24, 1968, Ser. No. 731,823
Int. Cl. B60c *9/02, 9/12*
U.S. Cl. 152—354 **5 Claims**



A pneumatic tire of cord-reinforced vulcanized elastomeric material having a carcass formed of a tape of elastomer-covered reinforcing cords wound in a generally geodesic pattern with the beads each being formed of substantially tangentially disposed portions of the tape with an inextensible ring between layers of the tape. The method of making such a tire comprises continuously winding layers of a tape of elastomer-covered cords in a generally geodesic pattern on a tire building drum, applying an inextensible ring to the partially wound tire at either end of the drum and then completing the winding so that the rings are imbedded between layers of the tape.

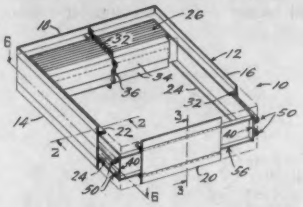
3,575,228
REINFORCEMENT OF ANNULAR BODIES
Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation
Filed May 17, 1968, Ser. No. 730,139
Int. Cl. B60c *9/06*
U.S. Cl. 152—356 **13 Claims**



An improved tire construction including a yarn reinforcement formed of twisted-together subelements so arranged that the direction of the central slope of the spiral defined by the twist is inclined generally oppositely to the inclination of the yarn or cord body within the annular body.

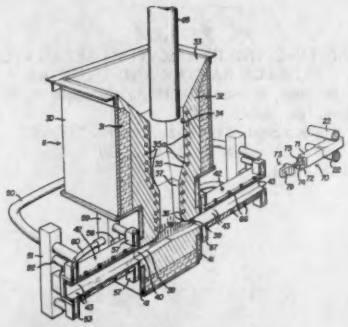
3,575,229
SMOKE SEAL FOR CURTAIN-TYPE FIRE DAMPERS
Raymond L. Alley, Toledo, Ohio, assignor to The American Warming & Ventilating Inc., Toledo, Ohio
Filed Aug. 11, 1969, Ser. No. 848,952
Int. Cl. E05f *15/20*
U.S. Cl. 160—1 **4 Claims**

A smoke seal for a curtain-type fire damper is provided. The seal comprises two metal strips located adjacent the side frame members of the fire damper, each being urged inwardly by a pair of resilient strips therebehind. The extent of inward movement of the strips is restricted by suitable stops located adjacent one end-frame member of the fire damper. The strips contact the ends of the fire damper blade sections



when they are closed to provide an effective smoke seal therebetween.

3,575,230
METHOD OF MAKING STEEL
Albert Calderon, 7732 Ragall Parkway, Cleveland, Ohio
Continuation-in-part of application Ser. No. 494,017, Oct. 8, 1965, now abandoned. This application Mar. 7, 1968, Ser. No. 711,282
Int. Cl. B22d *11/10*
U.S. Cl. 164—82 **25 Claims**



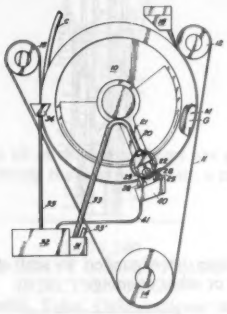
This disclosure proposes an improved method of continuous casting of steel or the like metals, especially with respect to the tapping temperatures, the initiation and the maintenance of casting operations. One aspect of such improved method resides in being able to successfully cast with furnace tapping temperatures which are substantially lower than the temperatures required to continuously cast conventionally. This is accomplished by pouring metal directly into a relatively small composite refractory reservoir having a chilling mold in close proximity thereof and whose refractory portions are intensely preheated to prevent premature solidification of molten metal in the refractory portions particularly in the area adjoining said chilling mold. It is essential that the heat-sensitive chilling mold not be subjected to the intense heat necessary for preheating the refractory. Specific procedures are set forth to protect the chilling mold, e.g. by cooling within defined temperature limits. Another aspect of the instant method resides in controlling the point at which the initial skin formation occurs, thereby preventing solidification of molten metal in the refractory portions of the apparatus. This is accomplished by determining the location of initial shell formation with the confines of the chilling mold and varying the speed at which the solidified shape is withdrawn from the chilling mold to retain the location of initial shell formation within the chilling mold.

3,575,231

METHOD AND APPARATUS FOR INJECTING THERMAL CONDUCTING IN A BAND WHEEL CONTINUOUS CASTING SHRINKAGE GAP

George E. Lenaeus, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Jan. 23, 1969, Ser. No. 793,354
Claims priority, application Belgium, Jan. 25, 1968, 53,803
Int. Cl. B22d *11/06*
U.S. Cl. 164—87 7 Claims



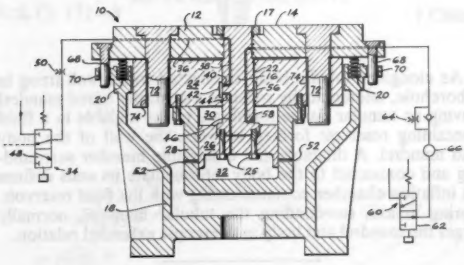
A continuous casting method which includes solidifying a molten metal in a casting wheel and injecting a heat-conducting medium into the gap formed between the metal and the casting wheel as a result of the solidification of the metal. Casting apparatus is also disclosed and includes a casting wheel having a peripheral groove with a portion closed by an endless band to form a mold and injecting means for injecting a heat-conducting medium into the mold to fill the gap formed between the metal in the mold and the casting wheel when the metal shrinks during its solidification.

3,575,232

FOUNDRY MOLD-MAKING APPARATUS

Lester C. Young, Cleveland, Ohio, assignor to Spo Incorporated, Cleveland, Ohio

Filed Apr. 29, 1969, Ser. No. 820,239
Int. Cl. B22c *15/02*
U.S. Cl. 164—207 8 Claims



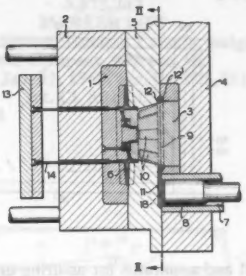
Jolting apparatus for compacting sand in a foundry mold, wherein a fluid motor is utilized to rapidly reciprocate a rapper member to impart impact blows to a table supporting the mold pattern.

3,575,233

DIECASTING MOLD

Joachim Mahle, Endersbacher Strasse 30, 7000 Stuttgart-Bad Cannstatt, and Walter Hartmann, Dorfgarten strasse 5, 7013 Oeffingen, Germany

Filed Oct. 7, 1968, Ser. No. 765,501
Int. Cl. B22d *17/04*
U.S. Cl. 164—312 5 Claims



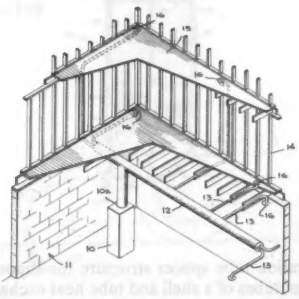
A separable diecasting mold is composed of a cover support plate to which the die core is attached, an ejector die having a die cavity, and a center plate between the cover support plate and the ejector die through which the core extends. Casting material is supplied under pressure through a groove in the joint between the cover support plate and center plate and leading to channels in the wall of the opening through the center plate, which channels terminate in the die cavity.

3,575,234

HEATING AND COOLING SYSTEMS

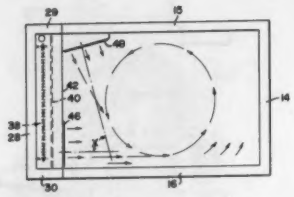
John J. Dieckmann, Rockingham County, Va.

Continuation of application Ser. No. 690,253, Dec. 13, 1967, now abandoned. This application Aug. 22, 1969, Ser. No. 866,052
Int. Cl. F24h *9/08*
U.S. Cl. 165—1 12 Claims



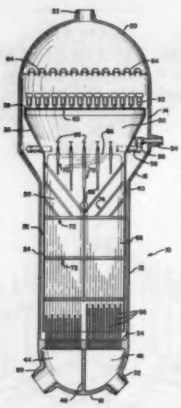
A high-velocity ducted air-type heating and/or cooling system wherein heated or cooled conditioned air is introduced into each of the rooms or spaces to be conditioned by a terminal nozzle in each room defining a smooth exit orifice which is free of diffusing or flow disturbing surfaces and is located in a boundary surface of the room, for example, the floor or ceiling. The orifice is directed perpendicular to the surface in which the nozzle is mounted to discharge a smooth unencumbered, sound attenuated, quiet stream of conditioned air a sufficient distance toward the opposite bounding surface to induce intermixing circulation of room air with the conditioned air in such manner that the entire room becomes a mixing box or chamber. A direct coupled or contiguous sound attenuator is provided immediately upstream of the outlet to permit this high discharge velocity without creating objectional noise.

3,575,235
ENVIRONMENTAL GROWTH CHAMBER
Noel Davis, Russell Township, and Thomas F. Vandenberg, Moreland Hills, Ohio, assignors to Integrated Development and Manufacturing Co., Chagrin Falls, Ohio
Filed Sept. 10, 1969, Ser. No. 856,727
Int. Cl. A01g 9/00
U.S. Cl. 165—2 11 Claims



A method and apparatus for assuring uniform, continuous air flow through a growth chamber by supplying the air to the chamber in separate paths to produce an interwoven rotary air flow through the chamber.

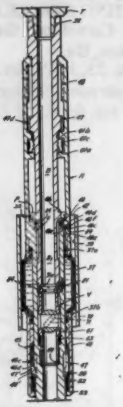
3,575,236
FORMED PLATE TUBE SPACER STRUCTURE
Nicholas D. Romanos, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Aug. 13, 1969, Ser. No. 849,701
Int. Cl. F28b 9/00
U.S. Cl. 165—162 26 Claims



Antivibration tube spacer structure for supportingly spacing adjacent tubes of a shell and tube heat exchanger in order to prevent damage to the tubes caused by flow-induced or other mechanically induced vibration. The spacer structure comprises elongated, thin plate members disposed between adjacent tube layers thus to provide engagement at two opposed points on the tubes. Struck out tab projections extending normally from the plate are arranged to engage the tubes on opposite, longitudinally-spaced points that are displaced by 90° from the points of plate engagement.

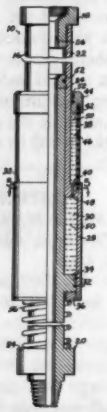
3,575,237
CLOSEOFF TOOL FOR BORES OR OTHER OPENINGS
Billy C. Malone, Houston, Tex., assignor to Lynes, Inc.
Filed July 10, 1969, Ser. No. 840,805
Int. Cl. E21b 33/127
U.S. Cl. 166—152 28 Claims

A bore or other opening closeoff tool for inclusion in a tubular string which extends within the bore or other opening, the tool including valve means to close off internally of the tool and tubular string and reinforced inflatable element



means which can be expanded to seal off within the surrounding bore or other opening.

3,575,238
INFLATABLE PACKER
Harold E. Shillander, 4141/2 Central S.E., Alburquerque, N. Mex.
Filed Aug. 4, 1969, Ser. No. 847,060
Int. Cl. E21b 33/127
U.S. Cl. 166—187 2 Claims



An elongated tubular body, connected with a well string in a borehole, telescopically receives a centrally bored mandrel having an annular flange forming a piston slidable in a fluid containing reservoir formed between the wall of the body and mandrel. A dilatable and collapsible member surrounding and connected to the body intermediate its ends defines an inflation chamber communicating with the fluid reservoir. Spring means, surrounding the tubular mandrel, normally urges the mandrel and body in telescopic extended relation.

3,575,239
PROGRESSIVE CENTRALIZER
James R. Solum, Huntington Beach, Calif., assignor to B & W Incorporated, Torrance, Calif.
Filed Apr. 18, 1969, Ser. No. 817,363
Int. Cl. E21b 17/10
U.S. Cl. 166—241 10 Claims

A well pipe centralizer with a plurality of outwardly bowed springs extending between aligned collars adapted to fit the

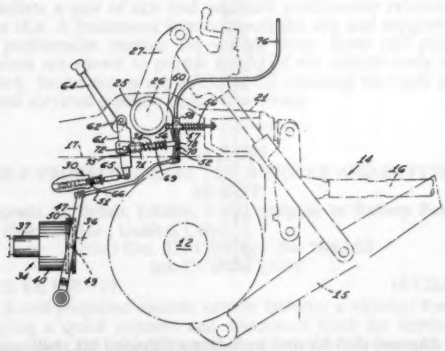
well pipe wherein the position of some of the spring bows on the collars is longitudinally offset from other spring bows

whereby less than all of the spring bows are engaged simultaneously when forcing the centralizer into a restricted opening.

3,575,240
RECOVERY OF HEAVY OILS BY FRACTURING AND INJECTION OF GAS
Vaughan W. Rhoades, Tulsa, Okla., assignor to Cities Service Oil Comapny, Tulsa, Okla.
Filed Apr. 25, 1969, Ser. No. 819,434
Int. Cl. E21b *43/18, 43/26*
U.S. Cl. 166—263 **14 Claims**

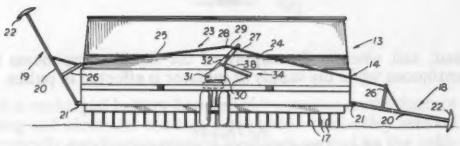
High-viscosity oil is recovered from subterranean reservoirs by a cyclic process that alternately enhances the mobility of the heavy oil at increasing distances from the production well and recovers the more mobile oil that drains into the vicinity of the production well. The increased mobility of the oil is achieved by the cyclic injection of a gas having a relatively high oil solubility into the reservoir through, and alternately producing the swollen oil from, the production well. The area of the formation contacted by the injection gas is greatly increased by fracturing the oil-bearing formation prior to gas injection. The fracture permits the injected gas to be carried into those areas of the formation not otherwise in immediate communication with the well and enhances the withdrawal of oil by providing a convenient path for the swollen oil to flow through in the formation to the production well.

3,575,241
TRACTOR HYDRAULIC LIFT CONTROL SYSTEM
Charles E. McKeon, Birmingham; William F. Lomas, Southfield, and Willard G. Smith, Detroit, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Mar. 30, 1967, Ser. No. 627,136
Int. Cl. A01b *67/00, 63/112*
U.S. Cl. 172—3 **7 Claims**



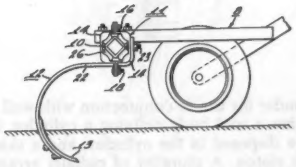
A tractor is provided with a torque-sensing device in the drive line to the tractor driving wheels to control operation of an implement hydraulic lift system for raising and lowering an implement as required to maintain a constant torque on the drive line. The system also provides for implement positioning responsive to position of a hand-operated quadrant lever and for positioning responsive to both drive line torque and quadrant lever position.

3,575,242
MARKER LIFT
Nils O. Olsson, Ancaster, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.
Filed Jan. 31, 1969, Ser. No. 795,451
Int. Cl. A01b *35/32*
U.S. Cl. 172—130 **4 Claims**



A flexible cable connecting right- and left-hand markers of an agricultural implement such as a grain drill, is provided with a central balance bar having a limited slidable connection with a swingable lift arm for the markers and having stops engageable with the arm to raise one of the markers and lower the other, the lift arm being operated by a hydraulic cylinder electrically actuated from a remote switch.

3,575,243
FIELD CULTIVATOR
Alexander H. Mark, Brookfield, and Maynard E. Walberg, Waukesha, Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Sept. 11, 1968, Ser. No. 759,154
Int. Cl. A01b *35/24*
U.S. Cl. 172—710 **4 Claims**

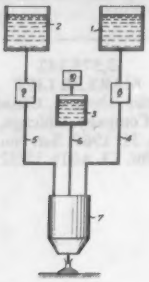


A field cultivator equipped with rubber cushions positioned between tool shanks and supporting frames for providing a flexible mounting of the tool shanks permitting the tool shanks to flex in any direction.

3,575,244
HEAD FOR LIQUID EXPLOSIVES
Miron Abramovich Schegolevsky, Moscow, Drovyanaya Ploschad, 9/10, kv.60, U.S.S.R.
Filed June 19, 1968, Ser. No. 738,358
Int. Cl. E21c *21/00, 37/12*
U.S. Cl. 175—4.5 **2 Claims**

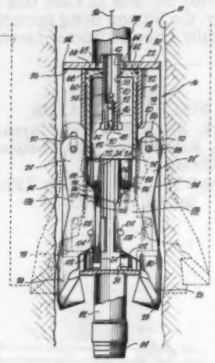
A head for liquid explosives primarily intended for rock destruction having channels for the delivery of liquid components and initiator wherein one of the channels for deliver-

ing liquid components and the channel for delivering the initiator converge to form a common outlet channel within the



head, and wherein the supply of the liquid components is continuous while the supply of initiator is effected in pulses.

3,575,245
APPARATUS FOR EXPANDING HOLES
Bruce J. Cordary, Los Alamitos, and Paul J. Arnerich, Fountain Valley, Calif., assignors to The Servco Company, Long Beach, Calif.
Filed Feb. 5, 1969, Ser. No. 796,778
Int. Cl. E21b *43/16*
U.S. Cl. 175—268 **9 Claims**

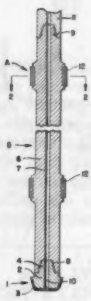


A hole expander for use in conjunction with well bore drill strings which has a tool body defining a cylinder, an axially movable piston disposed in the cylinder, and a skirt portion secured to the piston. A plurality of radially arranged arms have one end secured to the tool body and another end adapted to receive cutting tools such as rotary cone cutters or abrasive cutters that are pivotal about axes transverse to an axis of the cylinder and are movable in an axial direction over a predetermined distance. Sides of the arms adjacent the skirt portion have a configuration to engage the skirt portion. When the piston moves axially in response to pressure being applied to the cylinder, the arms pivot outwardly relative to the axis of the cylinders. An intermediate skirt engaging surface of the sides of the arms is angularly inclined relative to the axis of the cylinder and engages an end of the skirt portion. When the arms are farthest removed from the cylinder in an axial direction the intermediate skirt-engaging surfaces of the arms are disposed adjacent the free ends of the skirt portion of the cylinder and bias the skirt portion, together with the piston, in a direction towards the cylinder. When the cylinder is fully extended a skirt-engaging surface of the arms engages a periphery of the skirt and locks the arms in an outwardly projecting position.

3,575,246
OIL WELL BUMPER SUB
Robert P. Joncs, Long Beach, Calif., assignor to Midway Fishing Tool Company, Long Beach, Calif.
Filed May 9, 1969, Ser. No. 823,299
Int. Cl. F21b *1/10, 17/00*
U.S. Cl. 175—293 **5 Claims**

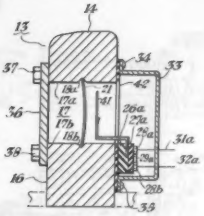
An oil well bumper sub in which an elongate cylindrical body is drivingly connected to a drill string supported mandrel that extends therethrough by a plurality of circumferentially spaced, longitudinally extending rows of balls located within the interior of said body, which balls permit limited longitudinal movement of the mandrel relative to the body. An annulus-shaped space that is defined between the mandrel and body is filled with a flowable lubricant and maintained therein by seals at the ends of the body. The lubricant cooperates with the seals and tends to prevent entry of any foreign matter into the interior of the body whereby the lubricant assures free longitudinal movement of the mandrel relative to the body.

3,575,247
DIAMOND BIT UNIT
Robijn Feenstra, Rijswijk, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Filed July 7, 1969, Ser. No. 839,541
Claims priority, application Great Britain, Mar. 6, 1969, 11886/69
Int. Cl. E21b *9/36, 9/22*
U.S. Cl. 175—329 **9 Claims**



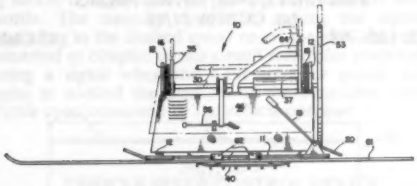
A diamond drill bit unit including a diamond bit, drill collar means operatively associated with said bit, and vibration reducing stabilizing means provided on said drill collar means.

3,575,248
WEIGHING DEVICE
Edward H. Bell, Monongahela, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Apr. 14, 1969, Ser. No. 816,006
Int. Cl. G01g *3/12, 19/04*
U.S. Cl. 177—163 **10 Claims**



This invention relates to a weigh rail having a crown, a web, a flange portion and an elongated slot extending transversely through the web portion between the crown and flange portions. A resiliently deformable means is interposed between the upper and lower surfaces of the slot such that deflection of the crown portion produces an orthogonal deflection of the resiliently deformable means with respect to the deflection of the crown portion. A transducing means is cooperatively associated with the resiliently deformable means and is responsive to a deflection in the resiliently deformable means for providing an indication which is directly proportional to the amount of deflection of the crown portion.

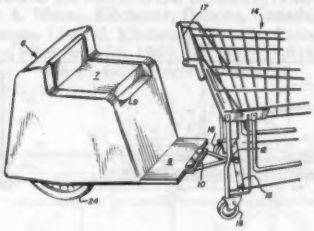
3,575,249
SKI-EQUIPPED VEHICLE
John Raistakka, 1414 S.W. 12th Ave., Portland, Oreg. 97201
Filed Apr. 10, 1969, Ser. No. 814,945
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 **5 Claims**



Disclosed in the following specification is a ski-equipped vehicle having a powered continuous belt disposed intermediate a pair of skis and vertically positionable relative to the skis. A framework interconnects the skis and supports in a positionable manner the vehicle body. Rack and pinion means are shown to permit raising of the vehicle body and track. Brake means are disclosed for retaining the body in a fixed elevated position on the framework.

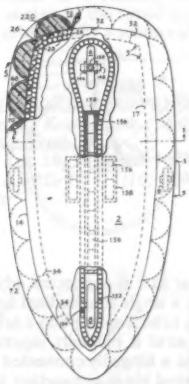
3,575,250
SELF-PROPELLED ELECTRIC VEHICLE AND BATTERY MOUNT
Darwin H. Dykes, Golden, Colo., assignor to Battery Power Unit Co., Inc., Golden, Colo.
Filed Dec. 23, 1968, Ser. No. 786,150
Int. Cl. B62d *59/04*
U.S. Cl. 180—11 **16 Claims**

A self-propelled electric vehicle includes a wheeled frame having a quick connect and disconnect hitch for drivingly connecting the vehicle to a variety of wheeled devices. An individual drive for each of a pair of ground-contacting wheels includes a separate, reversible motor and a power transmission train coupled to each wheel which carries an inturned extension over which a transmission member is trained. The motors are mounted on a pivotal base and yieldingly urged away from the wheels to maintain tension in the power transmission train during rotation of the wheels by the motors. A mount for the quick replacement of a battery on the vehicle



with a recharged battery has a carrier member on the battery casing and electrical contacts arranged to removably seat on electrically conductive support members carried by the vehicle which are arranged to form power terminals on the vehicle.

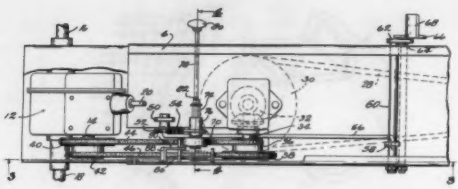
3,575,251
LIGHTWEIGHT, WRECK-RESISTANT CAR
Alvin E. Moore, 916 Beach Blvd., Waveland, Miss. 39576
Filed Feb. 4, 1969, Ser. No. 796,482
Int. Cl. B62k *19/16;* **B60f** *3/00*
U.S. Cl. 180—30 **30 Claims**



A vehicle, especially adapted for land travel, having strong, lightweight walls, comprising thin metal, cylindrical or corrugated cans, between skins, and surrounded by foamed plastic. These receptacles are sealed, thin-walled pipes or tubes; or rows of aligned short cans, end-to-end-glued together. The skins may be: metal sheets, epoxy glued or brazed to the cans; or metallic mesh attached to the cans by brazing or glue and/or bolts, coated with stucco. Optionally, each of the rows may comprise a plurality of aligned cans with adjoining end-caps that are strongly glued together, or a single, elongated, preferably corrugated tube.

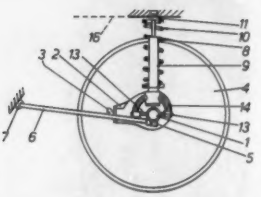
This invention pertains to lightweight and strong vehicles. Although its basic structure may be utilized in water-traversing vehicles, it is preferably incorporated in a wheeled vehicle, adapted for use on the land and also optionally in the air and in amphibious operation. One of its features comprises stabilization against roll of a two-wheeled or three-wheeled vehicle by providing balloon-lift approximately above its center of gravity.

3,575,252
VEHICLE WITH AUXILIARY SPEED CONTROL
Peter P. Konyha, Brillion, Wis., assignor to Ariens Company, Brillion, Wis.
Filed Mar. 27, 1969, Ser. No. 811,030
Int. Cl. B60k 17/00
U.S. Cl. 180—70 6 Claims



In the drive from a prime mover to a transaxle, different ratios of drive pulleys are selectively available to give varying ranges for each speed for which the transaxle makes provision. High- and low-speed belts are side by side and selectively effective according to the position of a belt tightener which may be lifted from either belt and shifted to registry and engagement with the other.

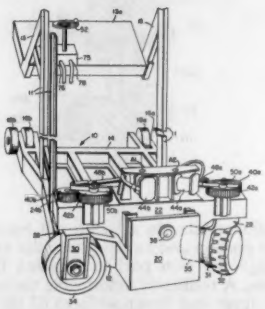
3,575,253
REAR AXLE ARRANGEMENT FOR MOTOR VEHICLES
Karl Brumm, Hessen, Germany, assignor to General Motors Corporation, Detroit, Mich.
Continuation of application Ser. No. 708,192, Feb. 26, 1968, now abandoned. This application Aug. 21, 1969, Ser. No. 851,821
Int. Cl. B60g 9/00
U.S. Cl. 180—71 5 Claims



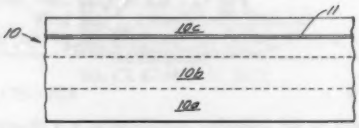
A rigid driven rear axle is connected adjacent each end to the vehicle body by a single longitudinal link and by a spring strut consisting of a helical spring and a telescopic shock absorber. The spring strut is pivotally mounted at one end to the vehicle body and is hingedly connected at its other end to the rear axle by a rigid hinge connection having a pivot axis which is transverse to the axle and is located at or below the level of the axle, the hinge connection thus being such as to permit pivoting of the strut in transverse planes of the vehicle but to form a rigid connection in the longitudinal direction of the vehicle.

3,575,254
STEERING MECHANISM
Laszlo Sipos, Saratoga, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Feb. 10, 1969, Ser. No. 797,782
Int. Cl. B62d 5/10
U.S. Cl. 180—79.2 11 Claims

A steering mechanism for turning the front wheels of a four-wheel vehicle selectively in either direction to different angular positions relatively to their neutral positions by simple manipulation of a common control element for both wheels. For this purpose each front wheel is supported from a vertically disposed shaft which is mounted for rotation about an axis extending diametrically of the wheel, and each shaft carries a gear. Hydraulic cylinders are mounted for rotation about vertical axes at the opposite sides of the plane symmetry between the wheels, and the projecting ends of their piston rods are pivotally connected; and links are pivotally connected between the pivot connection of said piston rods and arms which extend across and are arranged to turn with another set of gears in mesh with said first mentioned gears. Hydraulic circuit means is provided for selectively retracting one of the two piston rods while maintaining the other one in a projected position, and vice versa. When this occurs, the resultant movement of the pivotal connection between the two piston rods along an arc on the side of the retracted piston rod, causes the links to impart a greater degree of rotation to the gears, and hence to the wheel, on the side of the retracted piston rod than to the gears and hence to the wheel on the opposite side.



3,575,255
AUTOMOBILE GUIDANCE SYSTEM
Svante Theodore Wickstrom, East Oakdale Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 11, 1968, Ser. No. 766,863
Int. Cl. B60k 31/00
U.S. Cl. 180—98 13 Claims

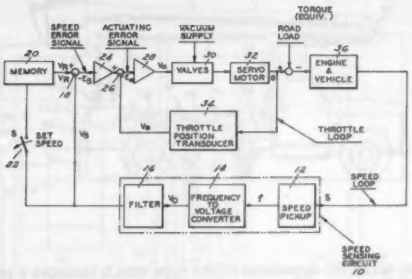


A method for controlling the speed and direction of an automobile on a highway. The highway is provided with an essentially continuous magnetizable stripe extending in the direction of travel, with the stripe being magnetized with a sequency of magnetic poles alternating in polarity and located along the highway according to a predetermined frequency; preferably the stripe is provided by painting a mixture of organic polymeric binder material and magnetizable particles on the highway. The automobile is provided with two magnetic-flux-sensors arranged to straddle the magnetizable stripe and pass through the fields above the stripe and develop an alternating electric signal having a frequency determined by the spacing between the magnetic poles and by the speed of the automobile. Speed and direction-controlling means in the automobile receive the signal generated in the magnetic-flux-sensors and change the speed and direction of the automobile in proportion, respectively, to the amount that the total flux-sensor-derived signal varies as to frequency from a standard and to any difference in amplitude of the derived signals of the two sensors.

3,575,256
SPEED CONTROL SYSTEM FOR AN AUTOMTOIVE VEHICLE

Zbigniew J. Jania, Northville, Mich., and Elliott Josephson, Los Altos, Calif., assignors to Ford Motor Company, Dearborn, Mich., said Jania assignor and Philco-Ford Corporation, Philadelphia, Pa., Said Josephson assignor

Filed Jan. 12, 1969, Ser. No. 798,672
Int. Cl. B60k *31/00*
U.S. Cl. 180—105E **16 Claims**

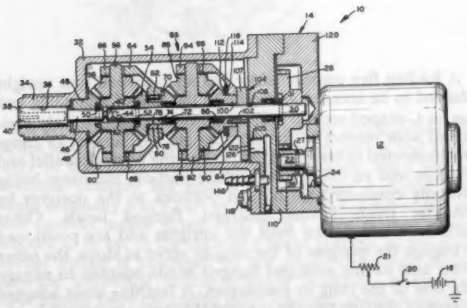


This disclosure relates to a speed control system for an automotive vehicle operated by an internal combustion engine and includes a controller means or throttle coupled to the internal combustion engine for controlling the output power of the engine and the speed of the vehicle. Means are provided in the system for producing a first electrical signal corresponding to the actual speed of the vehicle and means are also provided for producing a second electrical signal corresponding to the position of the throttle or controller means. There are also means provided for producing a signal corresponding to a desired or set speed of the vehicle. Power actuating means in the form of a servomotor is coupled to the controller or throttle means for controlling the position of the throttle or controller means and a memory is provided for storing the signal corresponding to the set or desired speed of the vehicle. Means, preferably in the form of a differential amplifier, receive the first, second and third signals and combine them to produce an actuating error signal which is applied through circuit means to the power actuating means or servomotor to operate the controller means or throttle. The memory means for storing the signal corresponding to the desired speed ro set speed of the vehicle is connected or coupled to this circuit means for producing and storing a signal when the servomotor or power actuator begins to control the position of the controller means or throttle upon command by the vehicle operator.

3,575,257
VEHICLE SPEED CONTROL DEVICE

Richard J. Wojcikowski, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Feb. 12, 1969, Ser. No. 798,713
Int. Cl. B60k *31/00*
U.S. Cl. 180—105 **12 Claims**

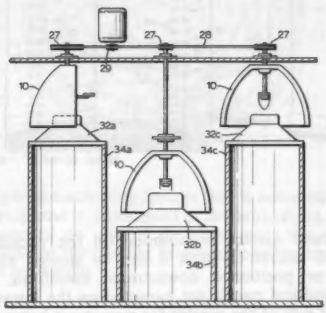


A speed control unit is provided wherein two input speed signals are received mechanically, one being a referenced speed and the other being the actual speed, and these speeds differenced so as to provide an output signal which can be utilized to accelerate or decelerate an engine which is to be automatically controlled.

3,575,258
TREMOLO OR VIBRATO PRODUCING APPARATUS INCLUDING ROTATING OR OSCILLATING RAFFLE

Lawrence A. Muma, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed Sept. 18, 1969, Ser. No. 859,016
Int. Cl. G10k *11/10;* **H04r** *1/34*
U.S. Cl. 181—27 **6 Claims**

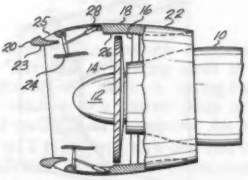


The sound channel of a rotating baffle for creating a tremolo effect is, as seen by the sound transducer that "fires" into the channel, substantially a semiparabola of revolution.

3,575,259
RETRACTABLE NOISE SUPPRESSION SYSTEM

Philip W. Wilkinson, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 10, 1970, Ser. No. 027,275
Int. Cl. F01n *1/14, 1/16;* **B64d** *33/06*
U.S. Cl. 181—35 **7 Claims**



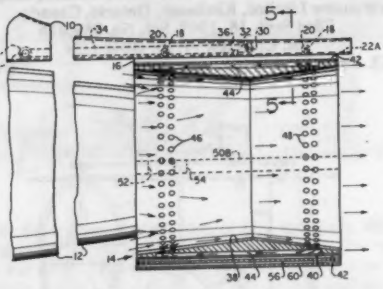
An aircraft engine air inlet noise suppression foil means comprising a plurality of segmented acoustically treated foil members stowed in recesses along the wall of the inlet passageway during cruise flight. The foil members are movable to an operative position for takeoff and low speed flight where they collectively form a ringlike array which splits the inlet flow and increases the acoustically treated wetted surface area tending to reduce sound pressure levels. The preferred embodiment provides stowed positions in auxiliary intake passageways which are opened by a translating cowl section, and foil members which automatically rotate to conform to local streamlines of the changing flow pattern in the inlet.

3,575,260

METHOD AND APPARATUS FOR AUGMENTING THE THRUST OF A JET-PROPELLED AIRCRAFT AND SUPPRESSING THE NOISE THEREOF

George R. Urquhart, El Cajon, and Remo Tontini, San Diego, Calif., assignors to Rohr Corporation, Chula Vista, Calif.

Filed May 15, 1969, Ser. No. 835,281
Int. Cl. F01n *1/14, 1/16;* B64d *33/06*
U.S. Cl. 181—51 11 Claims



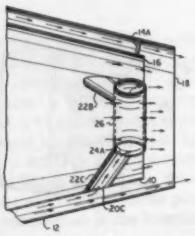
A tubular ejector is mounted on the nacelle of a jet-propelled aircraft so that it can be stowed alongside the nacelle or positioned downstream therefrom. A pair of hemicylindrical panels are mounted on the lower portion of the outer side of the ejector for movement between a stowed position alongside the ejector and a deployed position wherein one of the panels projects from the aft end of the ejector and the other panel projects from the aft end of said one panel. The jet stream flowing through the ejector is prevented from detaching from the inner surface thereof by admitting a portion of the boundary layer of said jet stream into holes which terminate within an area encircling the aft portion of said inner surface and which communicate with the forward portion of the ejector throat.

3,575,261

FAN JET SILENCER WITH FLUID MIXTURE

George E. Medawar, San Diego, and Felix Hom, La Mesa, Calif., assignors to Rohr Corporation, Chula Vista, Calif.

Filed Oct. 24, 1969, Ser. No. 869,084
Int. Cl. R64d *33/06*
U.S. Cl. 181—51 2 Claims



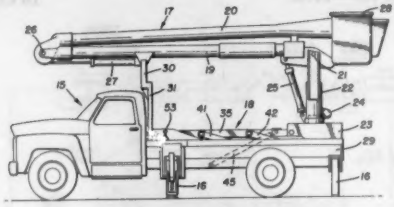
A tubular housing is disposed in spaced relation around thrust nozzle of aircraft turbofan engine and extends downstream from aft end thereof, fan air of said engine being discharged through the annulus between the housing and nozzle. Tubes are connected at one end thereof to edges of openings spaced around periphery of the nozzle and at other end thereof to edges of openings spaced apart around periphery of a hollow ring coaxially mounted within nozzle at the aft portion thereof, so that portion of fan air flowing through the aforesaid annulus enters tubes and is discharged from a circular slot in the aft end of the ring into central portion of primary exhaust gas stream flowing through nozzle, the remainder of the fan air flowing around the stream discharged from the nozzle.

3,575,262

AERIAL LIFT APPARATUS WITH ELEVATOR

Glenn W. Way, Delaware, Ohio (c/o Transairco, Inc., P.O. Drawer B)

Filed Dec. 27, 1968, Ser. No. 787,521
Int. Cl. E04g *1/22*
U.S. Cl. 182—2 3 Claims



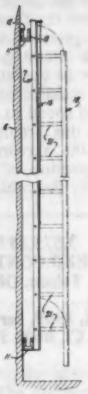
An aerial lift apparatus of the type which includes a primary lift boom assembly composed of relatively foldable hinged sections, carried on a vehicle by means of an auxiliary elevator assembly which is supported by parallelogram linkage for vertical swinging movement in a plane extending longitudinally thereof.

3,575,263

FOLDING FIRE ESCAPE LADDER

Cheyenne A. Reinhard, 594 Beatrice St., San Leandroc, Calif.

Filed Sept. 29, 1969, Ser. No. 861,684
Int. Cl. E06c *1/383*
U.S. Cl. 182—160 3 Claims

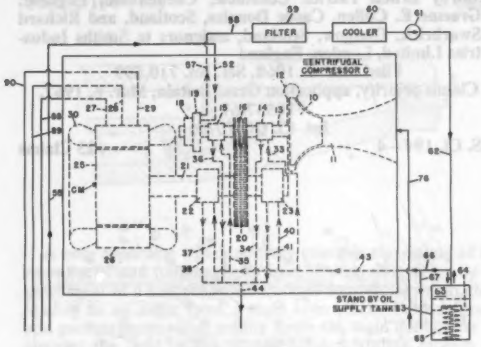


A folding fire escape ladder has an L-shaped first upright adapted to be secured vertically to the side of a building and has an L-shaped second upright parallel to but reversely positioned with respect to the first upright. A plurality of rungs are connected to both uprights, each rung having parallel end portions and an offset intermediate portion, the rungs being pivotally connected at the end portions to the uprights by shoulder rivets having enlarged, flanged heads. Other shoulder rivets extend from the uprights and are positioned to engage the margins of the rung to serve as stops, the other rivets also having enlarged flanged heads adapted to engage one side of the rung as positioners. A latching lever adapted to engage the first upright is releasably held against a fulcrum on the second upright by a spring, there being an actuating cable attached to the lever and to the second upright.

3,575,264
OIL PUMPING SYSTEM

John G. Johnson, Waynesboro, and George N. Miller, Jr., Staunton, Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 17, 1969, Ser. No. 807,801
Int. Cl. F16n *13/22*
U.S. Cl. 184—6 9 Claims

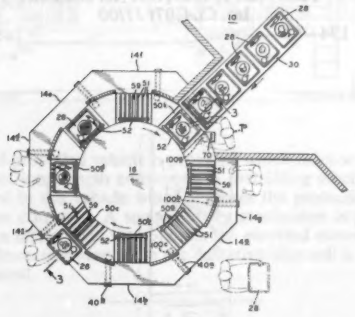


A centrifugal refrigerant compressor has an internal oil pump consisting of an oil pumping plate on the shaft of its impeller, and a thrust plate. At startup of the compressor, an external oil pump circulates oil through the internal pump and the bearings of the compressor. When the compressor speed approaches normal, an oil pressurestat opens a switch which turns off the external pump, and the internal pump circulates the oil.

3,575,265
ARTICLE DELIVERY SYSTEM

Luther G. Simjian, Laurel Lane, Greenwich, Conn. 06830

Filed Nov. 12, 1968, Ser. No. 775,047
Int. Cl. E04h *3/04*
U.S. Cl. 186—1 1 Claim

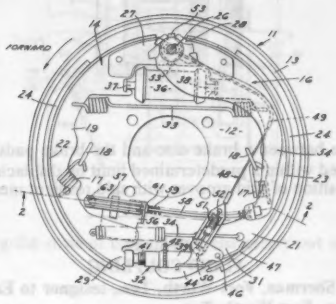


An article delivery system comprises an article-conveying means having a plurality of article support means and a plurality of stationary article-receiving positions. Each article-receiving position has means for receiving a coded stub which originally was a part of a coded ticket. Each of the article support means is provided with a code storage means adapted to be set by the code of a ticket portion. As the code storage means is conveyed by the article-conveying means past the individual article-receiving positions, it receives input signals from the coded stubs disposed at the respective positions. If a signal match is obtained, the article conveyed by the conveying means is delivered to the respective position and the respective storage means is zeroized.

3,575,266
SELF-ADJUSTING PARKING BRAKE

Amnon Sitchin, Gainesville, Fla., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 28, 1969, Ser. No. 845,367
Int. Cl. F16d *65/22*
U.S. Cl. 188—106 6 Claims

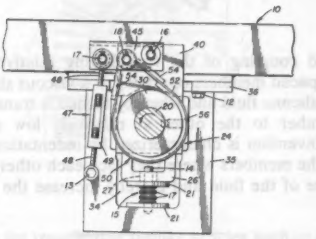


A parking-brake-actuating linkage that is automatically adjustable in response to adjustment of the brakeshoes. A cable guide is mounted on one of the shoes near the adjusting screw and tightens the parking brake cable as the brakeshoes are adjusted outwardly.

3,575,267
SELF-COMPENSATING LOAD RESPONSIVE BRAKE ASSEMBLY

Walter William Lauer, Jr., Canton, Ohio, assignor to The General Tire & Rubber Company

Filed Apr. 21, 1969, Ser. No. 817,798
Int. Cl. B60t *8/18*
U.S. Cl. 188—195 4 Claims



A self-compensating brake assembly continually applies a braking or drag force on a rotating shaft in response to changes in weight on the shaft. A spring-biased bearing moves vertically relative to a carrier plate in response to changes in weight on the shaft it supports. An endless brake band is attached to a pivot arm with one end connected to the bearing support and the other end connected to the bearing member. The brake band, which continually engages a brakedrum rotating with the shaft, is connected to the arm between its ends. Therefore, the brake band support point moves a lesser vertical distance in proportion to the brake drum to provide tightening and loosening contact of the band in proportion to the weight on the shaft.

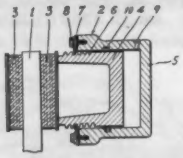
3,575,268
AUTOMATIC CLEARANCE-ADJUSTING MEANS FOR DISC BRAKE

Shigehiro Kimata, Yokohama, Kansgawa Prefecture, Japan, assignor to Isuzu Motors Ltd., Tokyo, Japan

Filed Sept. 8, 1969, Ser. No. 856,048
Int. Cl. F16d *65/54*, *55/18*
U.S. Cl. 188—196 8 Claims

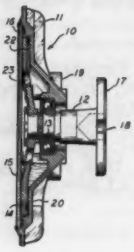
An automatic clearance-adjusting means for a disc brake, wherein spaced annular grooves are provided in parallel with

each other on the circumference of a piston having brake pads at its one end, and resilient means is provided on a cylinder so as to engage with said grooves, whereby the



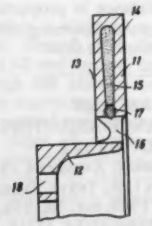
clearance between a brake disc and the brake pads is always maintained within a predetermined limit by displacing the engaged position of said grooves with said resilient means.

3,575,269
FLUID COUPLING
Scott G. Sherman, Fort Worth, Tex., assignor to Eagle Parts Co., Inc., Fort Worth, Tex.
Filed Sept. 12, 1969, Ser. No. 857,404
Int. Cl. F16d *33/00*
U.S. Cl. 192—58R **3 Claims**



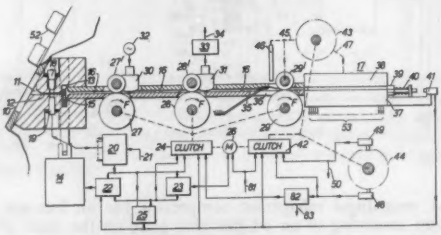
A fluid coupling of the type having relatively rotatable slightly spaced members operating in a viscous shear medium such as silicone fluid and whereby torque is transmitted from one member to the other at relatively low speeds. The present invention is characterized by indentations in one or both of the members where they face each other so as to entrap some of the fluid and thereby increase the shearing effect.

3,575,270
FRICTION MEANS
Heinrich Wagenfuhrer, Reinbek, and Carl Thomas, Hamburg, Germany, assignors to Jurid Werke G.m.b.H., Glinde, Reinbek, Germany
Filed Dec. 4, 1968, Ser. No. 781,047
Claims priority, application Germany, Dec. 9, 1967, P 16 25 745.7
Int. Cl. F16d *13/64*
U.S. Cl. 192—107 **2 Claims**



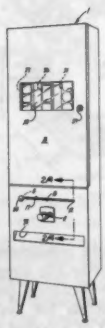
A friction means such as e.g. a friction brake or a friction clutch is provided with a rotatable friction part against which friction elements are applicable for e.g. braking or clutching. Said friction part consists of a hollow body being of rotational configuration and having a hollow substantially closed chamber therewithin extending therearound, said chamber being filled with damping material.

3,575,271
ACCESS-CONTROL EQUIPMENT AND ITEM-DISPENSING SYSTEMS INCLUDING SUCH EQUIPMENT
Geoffrey Ernest Patrick Constable, Cheltenham, England; Graeme E. Cullen, Castle Douglas, Scotland, and Richard Swarbrick, Glasgow, Scotland, assignors to Smiths Industries Limited, London, England
Filed Mar. 5, 1968, Ser. No. 710,599
Claims priority, application Great Britain, Mar. 6, 1967, 10537/67
Int. Cl. G07f *1/06*
U.S. Cl. 194—4 **23 Claims**



A money-dispensing system is operative to dispense money in response to a bank customer's punched card and keyed entry of his personal identification number, only if pulse recordings are detected on the card after it has been submitted to a magnetic-erasure process, such process erasing recording from all except high-coercivity material. Admission of a card to the equipment is barred unless it has a predetermined hole distribution along a leading edge.

3,575,272
SELECTOR MECHANISM FOR VENDING MACHINE
Russell L. Hildebrand, 1129 Madigan, Concord, Calif.
Filed Mar. 6, 1969, Ser. No. 804,840
Int. Cl. G07f *11/00*
U.S. Cl. 194—93 **5 Claims**

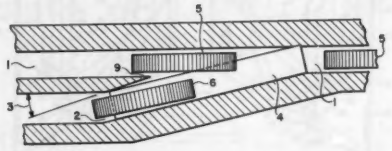


An apparatus enabling a single coin chute mechanism to selectively vend a plurality of items having a manually engageable selector arm connected to a pusher head which is in turn slidably connected to a guide rail mounted on the coin chute mechanism.

3,575,273
MEANS FOR SEPARATING DIAMAGNETIC FROM FERROMAGNETIC AND PARAMAGNETIC COINS AND DISKS

Harry J. Lajeunesse, 91 Village Green P.O. Box 1306, Stittsville, S.S. #4, Ontario, and Tadeusz Pecak, 750 Notre Dame Drive, London, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Feb. 7, 1969, Ser. No. 797,418
Int. Cl. G07f 3/02
U.S. Cl. 194—101 **5 Claims**

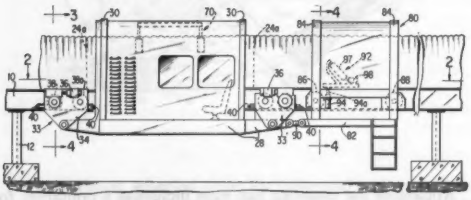


A coin separator which actively controls the rolling of ferromagnetic and paramagnetic from diamagnetic coins by the placement of a magnet in the floor of a subsidiary coin chute leading at an angle from a main coin chute. Ferromagnetic and paramagnetic coins rolling down the main coin chute encounter the field of the magnet, and in rolling motion are caused to turn into the subsidiary coin chute. Diamagnetic coins, not being attracted by the magnet field, continue down the main coin chute.

3,575,274
CONVEYOR FRAME SUPPORTED INSPECTION AND SERVICE VEHICLE

Sylvester E. Ewing, Pine Brook, and Jacob Hubee, Wayne, N.J., assignors to Hewitt-Robins, Incorporated, Stamford, Conn.

Filed Oct. 30, 1968, Ser. No. 771,783
Int. Cl. B65g 15/08, 15/60, 21/00
U.S. Cl. 198—1 **10 Claims**



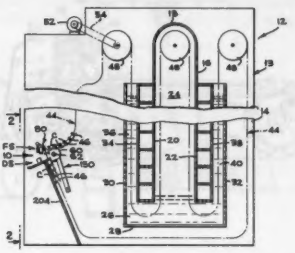
A self-propelled vehicle is provided which rides on the side beams of long length conveyors. A first lifting mechanism is provided in the vehicle which removes the protective cover from the conveyor. A second lifting mechanism is provided having a lifting head that permits the elevated conveyor belt to continue operation while the defective idler roll is repaired or replaced.

3,575,275
CONTAINER FEED AND DISCHARGE SYSTEM

James L. Reimers, San Jose; Donald S. Meek, Saratoga, and Warren S. Smith, San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 30, 1969, Ser. No. 795,283
Int. Cl. B65g 17/12, 47/04, 47/21
U.S. Cl. 198—24 **7 Claims**

A system for reliably guiding cylindrical containers supported on one end along a linear path and forming the containers into elongated rows of abutting containers. Transfer means for deflecting the rows of containers transversely into open articulating carriers while retaining the individual containers in each row in alignment. After the rows of containers have been processed a pusher is provided for positively

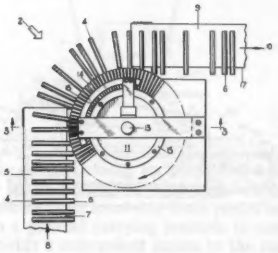


deflecting the rows of containers transversely out of the carriers.

3,575,276
DIRECTION CHANGING IN CONVEYANCE SYSTEMS

John P. Rupert, Stellenbosch, Republic of South Africa, assignor to Tobacco Research and Development Institute Limited, Zug, Switzerland

Filed Apr. 26, 1968, Ser. No. 24,332
Claims priority, application Republic of South Africa, May 26, 1967, 67/3135
Int. Cl. B65g 42/00
U.S. Cl. 198—25 **7 Claims**



A device for transferring rodlike articles such as cigarettes from one moving conveyor to another, that operates satisfactorily whether or not the articles are spaced at regular intervals on the delivering conveyor. The device is an endless element moving in a path between the conveyors, the element having resiliently deformable walls defining a continuous slot in which the end of an article overhanging the edge of the delivering conveyor is gripped. The article is released on to the second conveyor with its end overhanging the edge of that conveyor too. Cams or the like are used to deform the slot walls to cause gripping and release at the correct points.

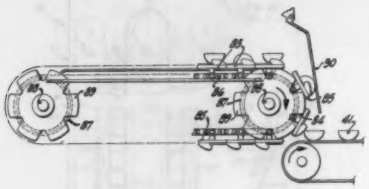
3,575,277
DUMP FEEDER

George E. Kilner, Alameda, Calif., assignor to Filper Corporation, San Ramon, Calif.

Filed Apr. 7, 1969, Ser. No. 813,955
Int. Cl. B65g 47/24
U.S. Cl. 198—33 **16 Claims**

An orienter and feed device for receiving, one at a time, generally hemispherical bodies, such as drupe halves indiscriminately positioned insofar as whether their planar and hemispherical surfaces are uppermost or lowermost, and automatically delivering said halves, one at a time, with their

planar faces uppermost. The disclosure includes means for delivering said drupes to a row of such devices and means for receiving and supporting the oriented halves delivered therefrom, in single files, one for each device.

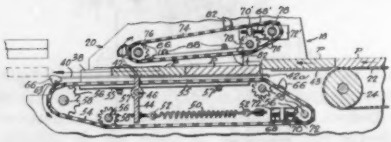


3,575,278

APPARATUS FOR SELECTIVELY RECEIVING AND ALIGNING PACKAGES

Wolfgang Hoffmann, Beaconsfield, and Cesar Eduard Purkhardt, Ville De Laval, Durvenay, Quebec, Canada, assignors to Canadian International Paper Company, Montreal, Quebec, Canada

Filed Apr. 19, 1968, Ser. No. 722,589
Claims priority, application Canada, Feb. 29, 1968, 13,690
Int. Cl. B65g *47/26, 19/26*
U.S. Cl. 198—34 **4 Claims**



An apparatus and method of selectively feeding and presenting individual packages, processed by a previous packaging operation in alignment for a subsequent wrapping operation. The apparatus includes two different control systems where one or more packages are taken under control of the first control system and presented to a second control system which feeds the packages to the subsequent wrapping operation. The two control systems are driven at different speeds so that a uniform feeding of the aligned packages is presented to the wrapping operation.

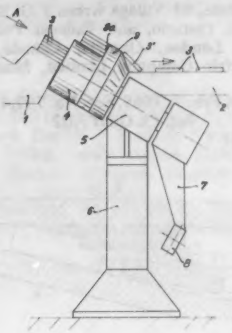
3,575,279

CONVEYOR FOR STACKED FLAT BARS

Otto Karl Buchheit, St. Ingbert-Saar, Germany, assignor to Moeller & Neumann G.m.b.H., St. Ingbert-Saar, Germany

Filed Sept. 2, 1969, Ser. No. 854,550
Claims priority, application Germany, Sept. 5, 1968, G67 50 387
Int. Cl. B65g *59/08*
U.S. Cl. 198—35 **2 Claims**

A device for dropping individual rolled flat bars moved crosswise in a stack over an inclined rake-type cooling bed on an adjacent horizontal roll-type cooling bed comprises inclined transport rolls having crescent-shaped bar stops with a maximum height corresponding to the top of the bar stack and rotatable to decrease the crescent level for dropping the bars successively on the roll-type cooling bed.

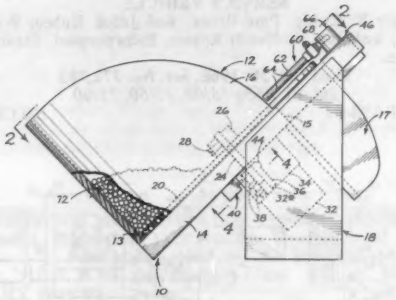


3,575,280

FISH EGG COUNTER

Denny B. McClary, Box 469, Bonneville, Oreg.

Filed Dec. 16, 1968, Ser. No. 784,143
Int. Cl. B65g *43/00, 29/00*
U.S. Cl. 198—40 **8 Claims**



Apparatus for counting fish eggs including a container for holding eggs to be counted, and extending into the container a revolvable disc, including multiple apertures for collecting eggs with the disc revolving. A counter is provided for counting the number of revolutions of the disc. Eggs carried away in the apertures are discharged therefrom through an opening positioned and sized to communicate, at a given time, with a multiplicity of apertures. A water sprayer outside the container and opposite the opening sprays water onto the disc's surface. Such facilitates egg removal and by producing a film of lubricant on the surface of the disc reduces friction between such surface and eggs engaged thereby.

3,575,281

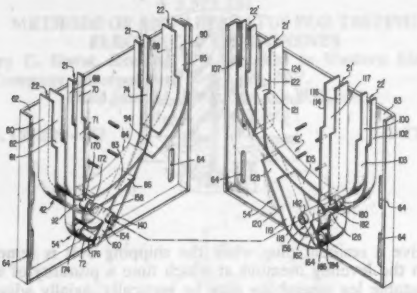
SUSPENDED TRAY CONVEYOR

William M. Sutton, Whittier, Calif.

Filed Dec. 9, 1968, Ser. No. 782,163
Int. Cl. B65g *17/00*
U.S. Cl. 198—158 **7 Claims**

A suspended tray conveyor of the type where load-carrying trays, carried at spaced points on sprocket supported endless chains, are guided by two sets of parallel tracks opposing one another on opposite sides of the elevator housing. On each

side, the tracks intersect each other in two places so that the trays may be pivoted from an operative load-carrying position to a folded position. Adjacent the intersection of the

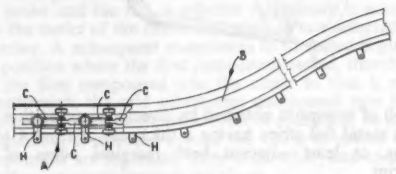


tracks the opposing tracks are of different depths and track engaging rollers on the trays are arranged so that by their engagement with the tracks at and adjacent the intersections each tray, as moved along on the conveying chains, is smoothly pivoted between the folded and operative positions.

3,575,282
ARTICULATED, WHEELED CHAIN FOR INDUSTRIAL CONVEYORS

Cesare Gaiotto (Strada Statale Milan-Crema km.27), and Alvise Gaiotto, Vaiano Cremasco, Cremona, Italy (Strada Statale Milan-Crema km.27)

Filed Oct. 21, 1968, Ser. No. 769,228
Claims priority, application Italy, Jan. 31, 1968, 12230-A
Int. Cl. B61b *13/04*; B65g *17/20*
U.S. Cl. 198—177 **2 Claims**



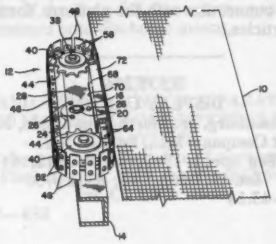
An articulated, wheeled chain for industrial conveyors having a plurality of U-shaped rigid elements which alternately lie in horizontal and vertical planes and are pivotally connected with each other by means of pins linking the knee of each element with the arm of the adjacent one. The pins are alternately perpendicular with one another and carry at their respective opposite ends a pair of wheels perpendicular to the related pin axis and adapted to engage with a track having a spider or square cross section. In this manner, the wheels are caused to always roll on the track without any sliding friction between track and wheels, even when the latter travel along curved track sections.

3,575,283
BELT GUIDE

John D. Curran, Chardon, Ohio, assignor to W. S. Tyler, Incorporated, Mentor, Ohio

Filed Feb. 6, 1969, Ser. No. 797,030
Int. Cl. B65g *15/64*
U.S. Cl. 198—202 **13 Claims**

An edge guide for an endless wire conveyor belt including an endless chain having a wide wear surface for contact with the conveyor belt. The chain is supported by two spaced sprockets mounted on a base plate which is journaled about a shaft fixed approximately equidistant from the sprockets. An upstanding guide flange adjacent one edge of the base plate

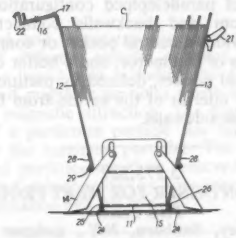


engages the back of the endless chain and limits lateral displacement; rollers on the chain are adapted to engage the flange in rolling contact.

3,575,284
POSTING TRAYS

Eric M. Holt, East Aurora, N.Y., assignor to Posting Equipment Corporation, Buffalo, N.Y.

Filed Sept. 9, 1969, Ser. No. 856,386
Int. Cl. A45c *11/00*; A47f *7/00*; B65d *5/52*
U.S. Cl. 206—1 **2 Claims**

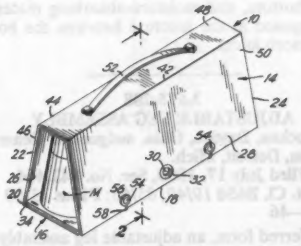


A posting tray devised chiefly for portability and thus having a relatively small capacity of rectangular cards. The tray is of the type where both front and back plates are movable outwardly from a parallel carrying position to acute angular positions to provide a convenient access to the cards. Simultaneously with such movement, legs are automatically spread outwardly to provide a stable enlarged base to support the file against tipping during filing operations.

3,575,285
COMBINED DISPLAY CARD AND CARRYING CASE

Robert D. Kahn, Rockville, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.

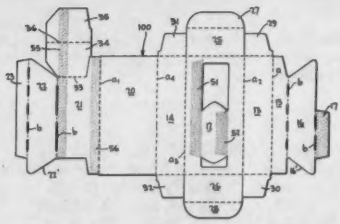
Filed Jan. 29, 1969, Ser. No. 795,087
Int. Cl. B65d *71/00*, *73/00*, *85/00*
U.S. Cl. 206—44 **3 Claims**



A combined display card and carrying case unit is provided for use in merchandising various consumer-type articles. The

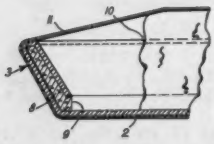
unit includes a display panel fixed to a platform, the platform supporting the articles to be sold. When hung on a peg of a display rack in a retail outlet, the display card is unfolded to advertise the articles. When a sale is made, the display card is folded and in connection with the platform, forms a carrying case for the articles.

3,575,286
DISPLAY CARTON
Charles W. Rosenburg, Jr., North Tonawanda, N.Y., assignor to F.N. Burt Company, Inc.,, Buffalo, N.Y.
Filed Apr. 1, 1969, Ser. No. 812,161
Int. Cl. B65d *5/48;* **B31b** *3/60*
U.S. Cl. 206—45.14 **8 Claims**



The carton is of parallelepiped configuration and comprises spaced front and backwalls connected by two sidewalls, and provides a central pocket or compartment for receiving an article of commerce, and a buffer compartment on each side of said pocket, defined by partition panels extending across the interior of the carton from front to back and parallel with the sidewalls.

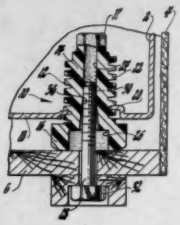
3,575,287
PACKAGING CONTAINER FOR MEAT PRODUCTS AND THE LIKE
Oscar W. Graveley, Sanborn, N.Y., assignor to Niagara Frontier Services, Inc., Buffalo, N.Y.
Continuation-in-part of application Ser. No. 751,420, Aug. 9, 1968, now abandoned. This application July 18, 1969, Ser. No. 843,132
Int. Cl. B65d *65/16*
U.S. Cl. 206—45.33 **10 Claims**



A packaging container including a tray having a transparent bottom and an upstanding rim. A channel in the rim is open to the bottom, and moisture-absorbing material in the channel is exposed at the juncture between the bottom wall and rim to absorb juices.

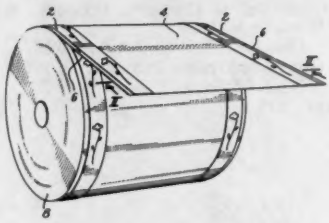
3,575,288
ADJUSTABLE LEG ASSEMBLY
Byron L. Brucken, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed July 17, 1969, Ser. No. 842,494
Int. Cl. B65d *19/40, 85/68;* **F16m** *13/00*
U.S. Cl. 206—46 **4 Claims**

In the preferred form, an adjustable leg assembly including an externally threaded, vertically adjustable, leveling member, adapted to be received in a threaded portion in the base of the domestic appliance, and furthermore, having an internal bore for receiving a shipping bolt whereby the domestic appliance may be rigidly secured to the base of a shipping container by the shipping bolt and leveling member. Also, the leveling member has a counterbore adapted to



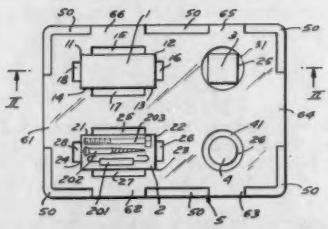
receive a resilient plug when the shipping bolt is removed from the leveling member at which time a plurality of such adjustable leg assemblies may be vertically, axially adjusted with respect to the respective threaded portions in the base of the domestic appliance so as to level the domestic appliance when supported on the adjustable leg assemblies.

3,575,289
REINFORCES ROLLS OF NEWSPRINT
Georges E. C. Brousse, 2, Avenue du President Wilson, Perpignan, Pyrenees-Orientales, France
Filed May 7, 1968, Ser. No. 727,360
Int. Cl. B65d *85/66*
U.S. Cl. 206—59 **2 Claims**



A roll of newsprint obtained by directly securing thin aluminum metal foil strips having a thickness of from 4 to 15 microns, at least adjacent both marginal edges of the newsprint.

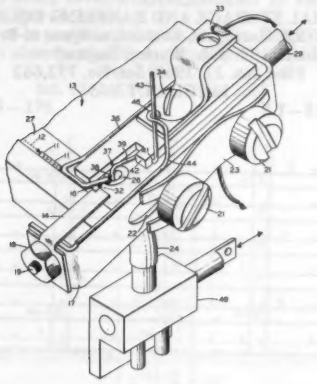
3,575,290
PACKAGED ARTICLE ASSEMBLY
Berthold Stork, Frankfurt am Main, Germany, assignor to Braun Aktienzesellschaft, Frankfurt am Main, Germany
Filed May 23, 1969, Ser. No. 827,407
Claims priority, application Germany, May 24, 1968, P 17 61 479.8
Int. Cl. B65d *73/00*
U.S. Cl. 206—80 **8 Claims**



A packaging assembly in which a frame partially overlaps a base member and is provided with sockets for the positioning

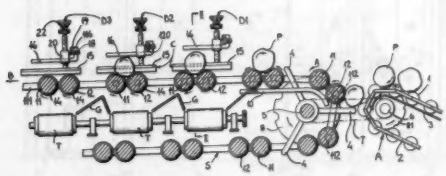
of articles therein. A translucent thermoplastic foil overlies the frame and articles positioned therein and is secured to those portions of the base members not overlapped by the articles or by the frame.

3,575,291
METHODS OF AND APPARATUS FOR TESTING ELECTRICAL COMPONENTS
Jerry C. Hurst, Reading, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed June 11, 1969, Ser. No. 832,350
Int. Cl. B07c *5/344*
U.S. Cl. 209—73 **9 Claims**



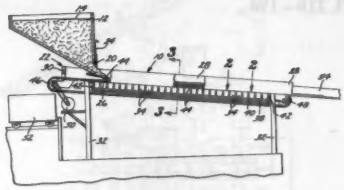
Electrical components, such as semiconductor chips, are tested, individually, and sequentially, at the rim of a conductive chute. The bottom surface of a component rests on the rim, while the top surface of the component is engaged by an electrical probe. In accordance with an electrical test across the probe and the rim, a selector mechanism is actuated so that the outlet of the chute is positioned to a selected output chamber. A subsequent component to be tested is pushed to the position where the first component rested, thereby pushing the first component into the chute so that it may fall therethrough, the said subsequent component now being in position for test. During each cycle of operation, an interposing member is directed toward the chute to assure that the components are separated from each other, and to urge the tested components through the chute.

3,575,292
FRUIT-GRADING APPARATUS
Cesare Roda, 7, Via Ugo Bassi, Cesena, Forli, Italy
Filed Nov. 19, 1968, Ser. No. 776,902
Claims priority, application Italy, Nov. 29, 1967, 814281
Int. Cl. B07b *13/04*
U.S. Cl. 209—90 **5 Claims**



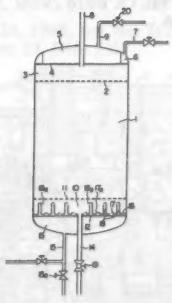
In a article-grading apparatus, a pair of endless belts, preferably formed by link chains support transversal shallow spaced trough-shaped containers provided with partitions and rear walls permitting their withdrawing from below the articles, when these are firmly held from their top point by frictional surfaces, constituted by swinging slats arranged at decreasing height above the articles in said trough-shaped containers. The articles, ejected from the advancing supporting trough-shaped containers due to their firm adherence to the underside of the slats, fall through the gap between subsequent containers onto discharge means.

3,575,293
METHOD AND APPARATUS FOR SEPARATING FINELY DIVIDED MATERIALS OF DIFFERENT SPECIFIC GRAVITIES
Harold C. Nelson, 4124 N. Pixie Ave., Lakewood, Calif.
Filed Apr. 24, 1969, Ser. No. 818,906
Int. Cl. B03b *3/04*
U.S. Cl. 209—458 **7 Claims**



A method and apparatus for separating finely divided materials of different specific gravities, and involving the passage of a liquid pulp including the materials of interest over a bed of magnetic particles which are retained upon a support by magnetic attraction. The higher specific gravity particles of a particular particle size fall between and are retained by the magnetic particles. The magnetic particles and retained particles are then removed from the support and separated subsequently by conventional means such as screening, flotation and the like.

3,575,294
COUNTERFLOW, MOVING BED TYPE, ION EXCHANGE APPARATUS
Mamoru Hirowatari, Tokyo-to, Japan; Takeo Kawai, and Kangai Ito, Yokohama-shi, Japan, assignors to Nippon Rensui Kabushiki Kaisha (also known as Japan Water Treatment Services Company), Tokyo-to, Japan
Filed Sept. 18, 1968, Ser. No. 760,643
Claims priority, application Japan, Nov. 27, 1967, 42/75651
Int. Cl. B01d *15/02, 33/16*
U.S. Cl. 210—189 **12 Claims**



In a counterflow moving bed type ion exchange apparatus in which an ion exchange resin is supplied to the upper portion of a column and a liquid being treated is supplied to the

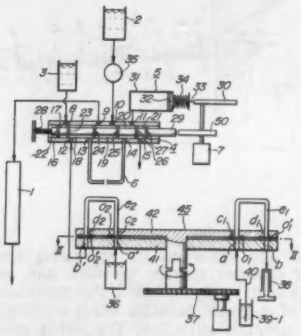
bottom of the column to flow upwardly through the moving resin bed, liquid jets are used to separate a predetermined quantity of the spent resin from the moving resin bed. The separated resin is circulated through a regenerating system including a washing column and a counterflow type regenerating column.

3,575,295

SAMPLE INTRODUCING SYSTEM FOR USE IN LIQUID CHROMATOGRAPHY

Kasumi Yoshida, Mito-shi; Takehide Satou; Masato Matsushima, and Yoshio Fujii, Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 9, 1969, Ser. No. 814,775
Claims priority, application Japan, Apr. 11, 1968, Dec. 9, 1968, Jan. 22, 1969, 43/24485;43/89542;44/4117
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 16 Claims



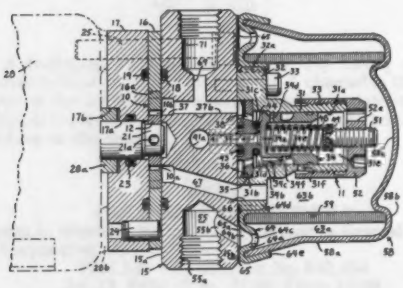
A sample introducing system for use in liquid chromatography, wherein samples stored in a plurality of sample reservoirs are each intermittently transferred to a sample reserving means, and every time when a sample has been transferred to the sample reserving means, an eluting or developing solution is fed through the sample reserving means to a separating column thereby to introduce the sample to the separating column. In addition, a development suppressing liquid can be fed to the separating column prior to each introduction of the sample to the separating column.

3,575,296

PUMP SYSTEM

Kenneth E. Peterson, 822 Hauthorne Ave., Rockford, Ill.

Filed Dec. 26, 1968, Ser. No. 786,995
Int. Cl. B01d *29/00, 35/28*
U.S. Cl. 210—416 16 Claims



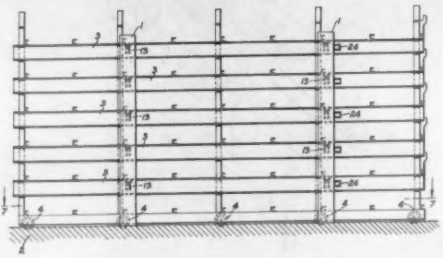
A pump system including a pump and a valve for controlling flow of fluid from the pump to a controlled outlet in which the valve provides a controlled bypass of fluid from the pump during startup of the pump to delay opening of the controlled outlet until the pump has attained sufficient speed to sustain a predetermined pressure at the flow rates required for the controlled outlet, and in which the valve thereafter closes the bypass and controllably opens a relief passage to maintain the predetermined pressure at the controlled outlet. The valve is in the form of a self-contained unit detachably mounted on the pump housing to enable pretesting of the valve and ready replacement. A filter unit is mounted on the pump and surrounds the valve unit and the filter unit is arranged so that it can be removed and replaced without permitting filtered particles from reaching the pump or valve.

3,575,297

MATERIAL STORAGE AND HANDLING EQUIPMENT

Norman Welch, Harrogate, England, assignor to B. C. Barton & Son Limited, Tividale, Warley, England

Filed Jan. 21, 1969, Ser. No. 792,662
Int. Cl. A47f *3/08*
U.S. Cl. 211—1.5 8 Claims



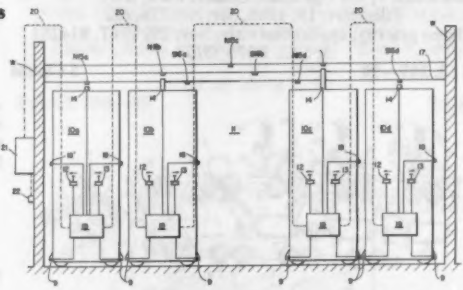
A storage apparatus having a stack of trays disposed one upon another within a framework, and pressure fluid units in the framework associated with the trays except the lowest tray, and being selectively extensible to lift a number of trays off the trays beneath enabling a portion of the stack to be moved out of the framework leaving the upper portion within the framework to permit access to the top tray of the moved out portion.

3,575,298

STORAGE RACK INSTALLATION

Erwin Ruoss, Tschill, Naters,, Switzerland, assignor to Josef Zurschmitten AG., Brig, Switzerland

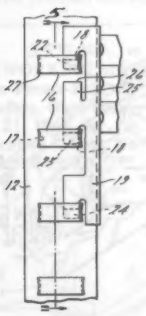
Filed May 7, 1969, Ser. No. 822,392
Claims priority, application Switzerland, May 9, 1968, 7099
Int. Cl. A47f *3/08*
U.S. Cl. 211—1.5 4 Claims



A storage rack installation having a rank of movable storage racks disposed in lateral juxtaposition and adapted to be shifted individually or in groups by associated drive means to open an access passage between any two selected neighboring racks. Each rack is provided with a reversible

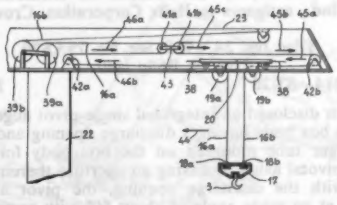
motor and is mounted on a plurality of wheels at least one of which is coupled to the associated motor. Control means are provided comprising a common control unit which determines the direction of rotation of the motors of the single or group of racks that is to be shifted, by reference to the position of two-way switch means of which one is associated with each rack, and which switch means adopt an open or closed position depending upon the existing position of the rack with which they are associated.

3,575,299
CONNECTOR FOR BEAM STORAGE RACKS
James J. O'Dette, Livonia, Mich., assignor to Palmer-Shile Company, Detroit, Mich.
Continuation-in-part of application Ser. No. 820,853, May 1, 1969, now abandoned. This application Sept. 2, 1969, Ser. No. 854,497
Int. Cl. A47f 5/10; E04g 3/08
U.S. Cl. 211—176 **4 Claims**



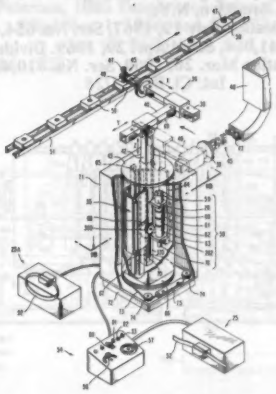
An adjustable beam storage rack having front and rear posts and beams with end connectors interfitting with spaced louvers on the posts. Each connector has a plurality of vertically spaced downwardly extending teeth and one of these teeth has an upwardly extending tab. When inserting the teeth in the louvers, this tab snaps into position under one of the louvers so as to prevent upward withdrawal of the teeth unless it is pried out of alignment with the louver wall by a screwdriver.

3,575,300
DEVICE FOR SUSPENSION AND DISPLACEMENT OF THE LOAD IN A DISTRIBUTIVE JIB TOWER CRANE
Pierre Durand, 19, rue Commandant Faurax, Lyon, Rhone, France
Filed Nov. 22, 1968, Ser. No. 778,225
Claims priority, application France, Dec. 11, 1967, 49,420
Int. Cl. B66c 23/02
U.S. Cl. 212—63 **7 Claims**



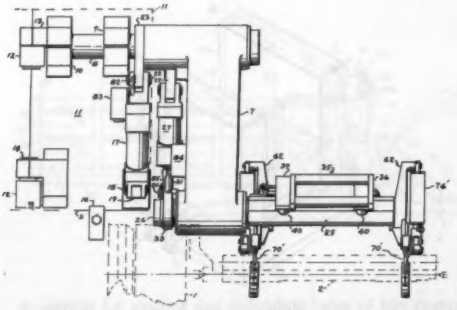
A tower crane with a horizontal distributive jib is traversed by a carriage bearing hoist cables with terminal swivels from which hangs a crossbar. The crossbar carries a load-bearing hook. The hoist cables pass over guide pulleys on the carriage in opposite directions via a plurality of further pulleys to respective drums synchronized winches. The further pulleys include two mounted on a block which moves horizontally in a direction opposite to that of the carriage so as to compensate for the changes in length of the hoist cables and hence to keep the load at a constant level. The tendency of the hoist cables and crossbar to twist is thereby obviated.

3,575,301
MANIPULATOR
Hugo A. Panissidi, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 2, 1968, Ser. No. 694,941
Int. Cl. B25j 9/00
U.S. Cl. 214—1 **21 Claims**



A hydraulically operated manipulator is controlled as an automatic assembly robot to grasp, position and join parts. A tape is perforated with coded instructions and dimensions to control the sequence and amount of displacement by means of incremental motions in several modes of movement of the manipulator. Such modes include grip, sweep, X, Y, Z, Θ (arcuate gripper wrist motion) and search (vibratory parts matching such as inserting a pin in a hole). The main components of the manipulator are a tape reader, an electrically and hydraulically controlled hydraulic serial-to-parallel converter and memory and a hydraulic driver, integer and fraction hydraulic piston adders, an articulated series of X, Y, Z slide members with a gripper and a wrist member all driven by a common drive cable, and a vibratory hydraulic search mechanism.

3,575,302
WORK HANDLING MECHANISM
Constantine F. Cafolla, Waterloo, N.Y., assignor to SFM Corporation, Union, N.J.
Filed Sept. 25, 1968, Ser. No. 762,530
Int. Cl. B66c 1/62
U.S. Cl. 214—1 **7 Claims**



A crank arm movable in opposite directions about a first axis carries an elevator arm movable with the crank arm

about the first axis and movable relative thereto in opposite directions about a second axis. A pair of finger units carried by the elevator arm for movement therewith about the first and second axes and for movement relative thereto in opposite directions about a third axis close and open to engage and release a workpiece. The elevator arm and finger units also are movable as a unit in opposite directions along the second and third axes, respectively, for shifting a workpiece into and out of a chuck.

3,575,303

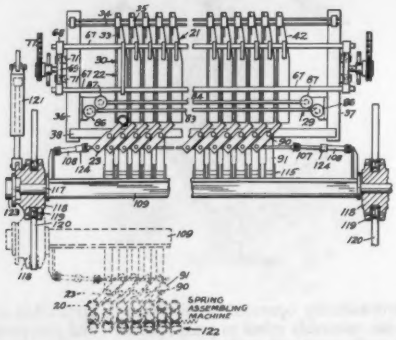
MEANS FOR TRANSFERRING NESTED COIL SPRINGS

Edward M. Fischer, Kew Garden Hills, and Edwin G. Krakauer, Roslyn Heights, N.Y., assignors to Kay Manufacturing Corp., Brooklyn, N.Y.

Original application July 19, 1967, Ser. No. 654,413, now Patent No. 3,441,064, dated Apr. 29, 1969. Divided and this application Mar. 26, 1969, Ser. No. 810,492

Int. Cl. B66c *1/28*

U.S. Cl. 214—1 **11 Claims**



Entire rows of coil springs are successively inserted into a conventional spring assembling machine by an individual unit for each spring of the row. Versatile grippers are operated to approach and recede from the row of springs to grip, invert, advance and rotate the row for the insertion of the entire row simultaneously and in the required position into the assembling machine which receives the row.

3,575,304

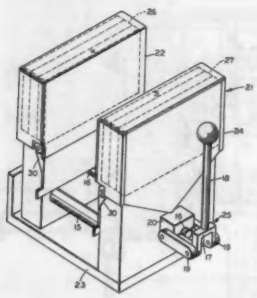
METHOD OF AND APPARATUS FOR LOADING A PLURALITY OF ARTICLES INTO A WORKHOLDER

Jerry C. Hurst, Laureldale, and Samuel E. Kurtz, Reading, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Original application Jan. 20, 1967, Ser. No. 610,675, now Patent No. 3,480,165, dated Nov. 25, 1969. Divided and this application Nov. 1, 1968, Ser. No. 812,493

Int. Cl. B65g *57/00*

U.S. Cl. 214—1 **6 Claims**



A mass of diodes having paramagnetic ends are placed and held in a magnetic field having horizontal, parallel lines of magnetic force established by a pair of upstanding, spaced, parallel magnetic walls. Pivotally attached to each of the walls is a flipper plate which is moved toward the magnetic field assuring that both ends of the diode are acted upon by the magnetic lines of force. Thereafter, the walls are moved toward each other; increasing the strength of the horizontal, parallel lines of magnetic force, and engaging and interleaving the mass of diodes.

3,575,305

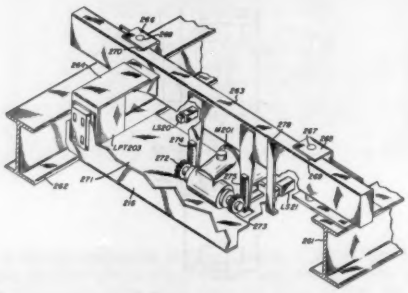
WAREHOUSE HAVING A LOAD HANDLING ELEVATOR WITH POSITION-SENSING MEANS MOVABLE RELATION THERETO

Arthur R. Burch, and Charles E. Bates, Battle Creek, Mich., assignors to Clark Equipment Company

Original application Apr. 18, 1966, Ser. No. 543,229. Divided and this application Dec. 10, 1968, Ser. No. 782,559

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 **11 Claims**



A material storage and handling system has a transfer vehicle and a stacker vehicle. The transfer vehicle is adapted to receive and carry the stacker vehicle and the stacker vehicle is adapted to carry and transfer material between the transfer vehicle and selected bins in a multiaisle, multibin storage structure. The stacker vehicle has an elevator with a laterally movable platform for moving material into and out of the bins. The position of the elevator to the bins is sensed by reed relays on the elevator that sense magnetic strips on the elevator superstructure that are coded to indicate respective bins. To pick up or deposit the material when the lateral platform is extended, the reed relays are selectively raised or lowered a small amount to effect a vertical shift of the platform for picking up or depositing material.

3,575,306

INTEGRATED SINGLE-PIVOT AUGER BOX

James H. Obermeyer, and Nicholas R. Richards, Crown Point, Ind., assignors to Helix Corporation, Crown Point, Ind.

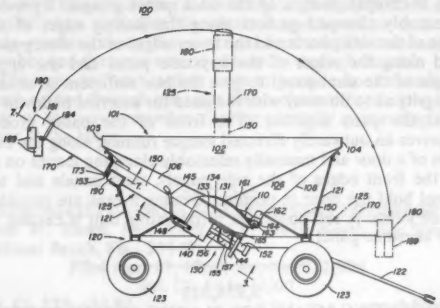
Filed Jan. 24, 1969, Ser. No. 793,679

Int. Cl. B60p *1/40*

U.S. Cl. 214—83.26 **16 Claims**

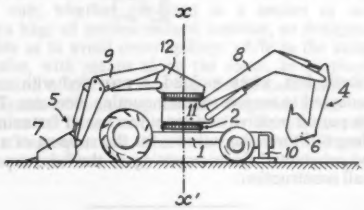
There is disclosed an integrated single-pivot auger box including a box body having a discharge opening and an elongated auger tube mounted on the box body for pivoting about a pivotal axis and having an aperture therein in registration with the discharge opening, the pivot axis being disposed at an acute angle of about 50° with respect to the horizontal and at an acute angle of about 65° with respect to the longitudinal axis of the box body, the auger tube being pivotal among a rest position disposed adjacent to the box body and a high discharge position extending outwardly and upwardly from the discharge opening with the discharge end well above the support surface and a low discharge position extending horizontally outwardly and with the discharge end

disposed a short distance above the support surface; in a modification, a spreader attachment is provided on the box



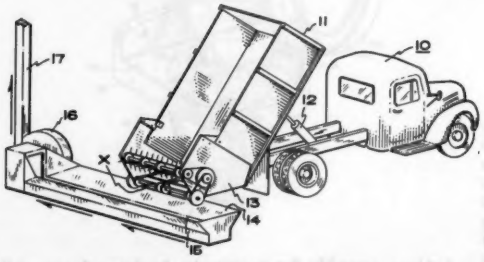
body in position to receive material from the auger tube when disposed in the rest position thereof.

3,575,307
EARTHWORKING MACHINES
Gabriel L. Guinot, Le Plessis-Belleville, France, assignor to Societe Anonyme Poclain, Oise, France
Filed Oct. 21, 1968, Ser. No. 769,125
Claims priority, application France, Nov. 13, 1967, 127,920
Int. Cl. E02f *3/75*
U.S. Cl. 214—138 **3 Claims**



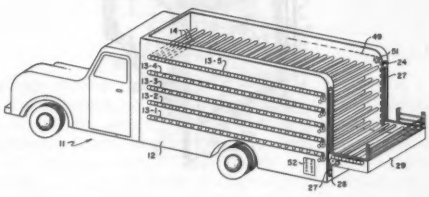
An earthworking machine with at least two beams supporting selected earthworking implements. The beams are mounted on the chassis and adapted to rotate. Actuating means are provided for the beams and earthworking implements.

3,575,308
CONVEYER-ENCLOSURE STRUCTURE FOR DUMP TRUCKS
Herald Moon, 1189 N. Main, Farmington, Utah, and Stephen H. Moon, 213 East 1700 South, Bountiful, Utah 84010
Filed Dec. 9, 1968, Ser. No. 782,022
Int. Cl. B60p *1/04*
U.S. Cl. 214—508 **2 Claims**



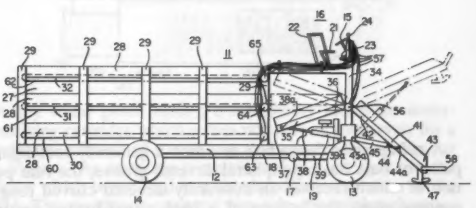
The present invention comprises a conveyer-enclosure structure, either made integral with or attachable to the bed structure of a truck, for completing the enclosure of the bed structure when the latter is in horizontal position and, alternatively, when the bed structure is preferably tilted to dump position, for conveying in an even manner the contents of the bed structure, for selected purposes. In essence, the invention includes a rear, slanted, conveyor bed or floor, with which is operatively associated an endless, revolving conveyor. A finger-including spindle is disposed above the conveyor so as to break up clod accumulations of material as the same is discharged over the conveyor floor of the conveyor-enclosure structure.

3,575,309
ON AND OFF CARGO LOADING MECHANISM
Wyatt B. Peterson, 1003 Tanglewood Drive, Clinton, Miss.
Filed Nov. 1, 1968, Ser. No. 772,641
Int. Cl. B60p *1/44*, *1/52*
U.S. Cl. 214—520 **5 Claims**



An apparatus for on-and-off loading of cargo in a truck body or the like including a plurality of vertically spaced horizontally extending motor-driven platforms enclosed within a cargo receiving area, each of said horizontal platforms comprising a plurality of spaced, propelled rollers and reversible drive means therefore for on-and-off loading; and a second vertically adjustable platform disposed adjacent an end of said spaced horizontal platforms comprising a plurality of spaced propelled rollers and reversible drive means therefore; and control means for selectively positioning said second platform relative to a determined one of said horizontal platforms and for actuating said drive means for said selected horizontal platform and said vertically adjustable platform whereby cargo may be selectively loaded and unloaded from said cargo storage space.

3,575,310
BALE HANDLING VEHICLE
Leo H. Albertson, Rte. 6, Box 470, Lakeview, Oreg.
Filed Jan. 29, 1969, Ser. No. 795,117
Int. Cl. B60p *1/38*
U.S. Cl. 214—522 **5 Claims**



A vehicle for loading and unloading bales of hay comprising a split apron providing a forward conveyor section pivotally fixed at the rear edge and movable at the forward

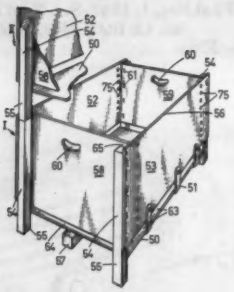
edge to various loading and unloading elevations and providing a rear conveyor section pivotally fixed at the forward edge and movable at the rear edge to the elevation of each of a plurality of conveyorized storage beds.

3,575,311

FRUIT CASE HAVING VENTILATION OPENINGS

De Laminne de Bex, and Gerard Etienne Marie, Gotem, Belgium, assignors to Nicolas Beck, Geneva, Switzerland

Filed Nov. 14, 1968, Ser. No. 775,715
Claims priority, application Belgium, Nov. 17, 1967, Apr. 30, 1968, 706,668;714,482
Int. Cl. B65d *81/24, 9/18, 21/00*
U.S. Cl. 217—42 **4 Claims**



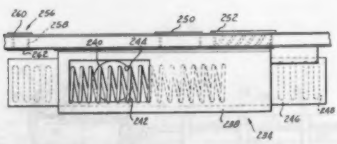
A case to be assembled, to be used for products needing ventilation, particularly for fruits, comprises a bottom solid panel section; two pairs of opposite solid side panel sections; connection strip means extending between the bottom panel section and at least one pair of side panel sections and defining therebetween ventilation openings. A pair of battens is secured along the lateral edges of one pair of the side panels and means connect the other pair of side panel sections with said battens, after setting up the side panel, sections so as to define a housing with said battens disposed outwardly thereof. The battens project beyond the bottom in setup relation of the side panel sections to provide supports for the case, such battens stopping short from the upper edges of the side panel sections, with the height of the projection portion of said battens being greater than the distance separating the top thereof from the upper edges.

3,575,312

REFRIGERATED CARGO BOX

August G. Luisada, Waymart, Pa., assignor to Gentex Corporation, New York, N.Y.

Filed Feb. 10, 1969, Ser. No. 798,038
Int. Cl. B65j *1/02;* **B65d** *7/12*
U.S. Cl. 220—1.5 **37 Claims**



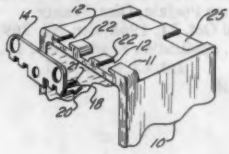
A refrigerated cargo box in which a generally rectangular pallet or base has a peripheral dovetail groove, the rear portion of which receives an outwardly directed curved tongue running along the bottom of a back panel having vertical sides and a trapezoidal top edge and the sides of which pallet receive inwardly directed tongues running along the bottoms of generally rectangular side panels. A dovetail groove running along the edge of the back panel above the bottom receives outwardly directed curved tongues of the side panels in its vertical portions, upwardly directed tongues along the backs of two slant panels in slant portions of the groove and a downwardly directed tongue of a top or keystone panel in the horizontal portion of the back panel groove. I provide releasably clamped gaskets along the mating edges of the tops of the side panels and the lower edges of the slant panels and along the edges of the keystone panel and the upper edges of the slant panel to give the box sufficient structural integrity as to do away with the need for external tiedowns to hold the parts together. The front of the pallet groove receives an outwardly directed tongue running along the bottom of a door and manually releasably clamping means on all of the front edges of the side panels, slant panels and top panel hold the door in position. Sealing means are provided at all joints. A self-contained refrigerating unit is carried by the keystone panel.

3,575,313

MOUNTING MEANS FOR PLASTIC OUTLET BOXES

Robert S. Trachtenberg, Pittsburgh, and Julius Earl Kreuzer, Sewickley, Pa., assignors to Midland - Ross Corporation, Cleveland, Ohio

Filed May 12, 1969, Ser. No. 823,830
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.3 **3 Claims**



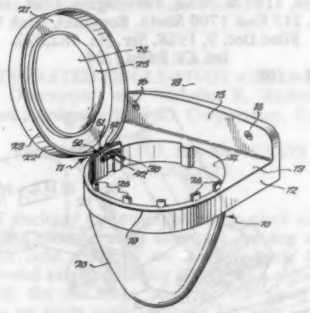
A plastic box, when molded, is provided with end extensions adapted to receive metal mounting elements. The metal mounts permit positive and repetitive use of fastening means, including self-threading screws, for the support of a receptacle and substantial flush mounting of the box, especially in thin wall construction.

3,575,314

HINGE ASSEMBLY FOR RECEPTACLES AND THE LIKE

Francis J. Ihlenfeld, West Seneca, and Valentin E. Beil, Eden, N.Y., assignors to McDonald Products Corporation, Buffalo, N.Y.

Filed Apr. 10, 1969, Ser. No. 815,006
Int. Cl. E05d *1/02*
U.S. Cl. 220—18 **7 Claims**



A hinge assembly for receptacles having a horizontally disposed bracket member provided with a curved surface opening therethrough and a cover member having a depending curved rim for covering the bracket opening.

A hinge-connecting member on the curved surface of the bracket opening has an opening therein which defines a horizontal slot adjacent the upper edge of the opening.

A wire hinge including a relatively large body portion and parallel arms extending therefrom is positioned so that the body portion abuts the inner surface of the connecting member and the arms extend outwardly through the slot.

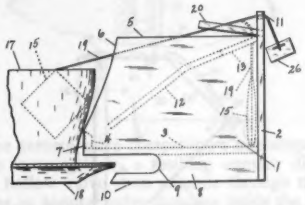
The arms are bent at their ends to provide hook members which extend through openings into a channel bead along the edge of the cover member rim for pivotally connecting the cover to the hinge.

3,575,315

STRINGED TEA BAGS AND DISPOSERS THEREFOR

Louis W. Rosen, New York, N.Y. (2018 North Bay Road, Miami Beach, Fla., 33140)

Filed Apr. 17, 1968, Ser. No. 722,096
Int. Cl. A41g *19/00*
U.S. Cl. 220—23.83 **1 Claim**



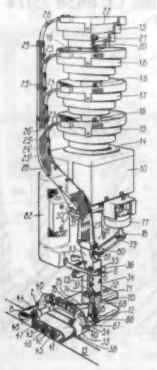
A self-contained disposer for transfer thereto from a conventional cup, whether centered in a saucer or not, of steeped tea bags of predetermined contour, so designed and positionable as to avoid outer spillage while in the course of such transfer, with means along the route, in keeping with the orientation of the movable bag, for automatically effecting the deposit of such bags in said disposer in an orderly array relative to their contour, and for simultaneously girdling the strings attached thereto in order to facilitate their manual removal from said disposer by a common grasp thereof.

3,575,316

BUTTON-FEEDING MEANS FOR SEWING MACHINES

Nereo Bianchi, Pavia, Italy, assignor to Necchi Societa Per Azioni, Pavia, Italy

Filed Mar. 27, 1969, Ser. No. 811,163
Claims priority, application Italy, Apr. 12, 1968, 32,409A68
Int. Cl. B65h *1/00*
U.S. Cl. 221—133 **9 Claims**



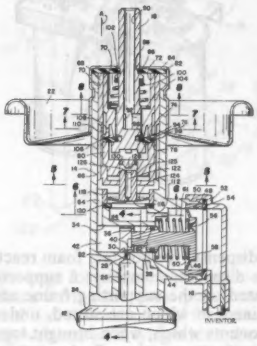
A button-feeding means for sewing machines comprising a plurality of button storage tanks and a device for selectively feeding buttons from any one of said tanks to the machine button clamp.

3,575,317

AN AEROSOL DUAL-DISPENSING SHUTOFF VALVE ADAPTED TO DISPENSE A PLURALITY OF FLUIDS FROM SEPARATE SOURCES AND TO SHUT OFF AUTOMATICALLY UPON THE DEPLETION OF ONE OF THE SOURCES

Samuel Beujamin Prussin, Los Angeles, and Jimmie L. Mason, Hacienda Heights, Calif., assignors to Dart Industries, Inc., Los Angeles, Calif.

Filed July 14, 1969, Ser. No. 841,344
Int. Cl. B65d *83/00*
U.S. Cl. 222—66 **8 Claims**



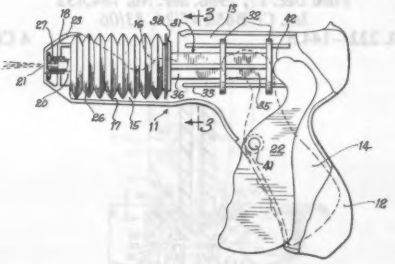
An aerosol dual-dispensing shutoff valve adapted to dispense a plurality of separate fluids from separate sources through a common outlet; said valve having automatic shutoff valves sensitive to the respective separate fluid sources, whereby said valves may respond automatically to shutoff all of said sources from said outlet when any one of said sources is substantially depleted.

3,575,318

WATER PISTOL

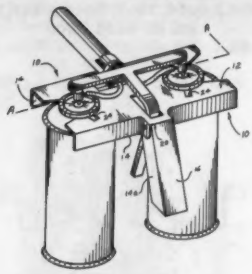
Oskar Kunz, Bergenfield, N.J., assignor to Jerome H. Lemelson, Metuchen, N.J.

Filed Apr. 14, 1969, Ser. No. 815,623
Int. Cl. A63h *33/00*
U.S. Cl. 222—79 **1 Claim**



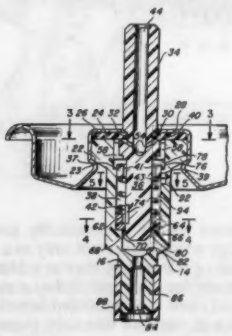
A toy water pistol having a detachably securable water-containing cartridge which serves not only as a reservoir for a substantial amount of water, but also as a biasing means for the trigger. The cartridge is constituted as a multiply-pleated bellows which is retained in a simulated barrel portion of the pistol. This portion is open on one side, permitting the cartridge to be easily inserted and removed. The forward end of the bellows has an orifice through which water is ejected when the bellows is compressed by squeezing of the trigger. A plunger having longitudinally spaced transverse webs is guided by axially extending, circumferentially spaced ribs within the barrel.

3,575,319
PORTABLE DISPENSER FOR POLYMER FOAMS
Albert Safianoff, Palos Verdes Peninsula, Calif., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed July 11, 1968, Ser. No. 744,064
Int. Cl. B05b 1/04
U.S. Cl. 222—135 4 Claims



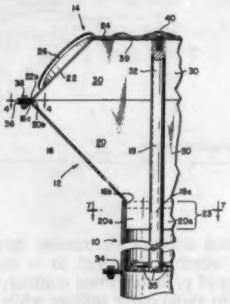
A portable dispenser for polymer foam reaction mixtures is provided. The dispenser comprises a supporting frame with handle. Mounted on the supporting frame are two or more aerosol containers in which are stored, under pressure, the various components which, when brought together, give rise to the polymer foam reaction. Each container is provided with a valve. The valves on all containers can be actuated simultaneously by a trigger device mounted in the supporting frame. The fluids released from the individual containers are conducted separately through short conduits to a mixing chamber located in one end of a tubular dispensing nozzle. A stationary baffle, preferably comprising a series of discs having peripheral apertures permitting constricted passage of fluid on a tortuous path, is disposed in the tubular nozzle between the mixing chamber and the exit port. The baffle ensures adequate mixing of the reaction components prior to dispensing of the reaction mixture from the exit port. The mixing chamber and baffle are readily removable for cleaning and the aerosol containers are detachably mounted for easy replacement. The portable dispenser is particularly suited for dispensing polyurethane foam reaction mixtures.

3,575,320
SEQUENTIAL VALVE
Samuel Prussin, Los Angeles, and Jimmie L. Mason, Hacienda Heights, Calif., assignors to Dart Industries, Inc.
Filed Dec. 17, 1968, Ser. No. 784,452
Int. Cl. B65d 47/26, 83/06
U.S. Cl. 222—144.5 4 Claims



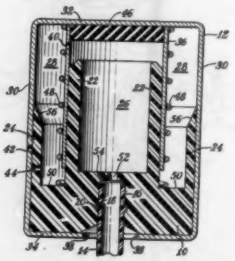
A sequential valve having a housing and a valve means reciprocally mounted therein, said valve means being cooperable with three spaced-apart valve elements in said housing such that said valve means may be forced into open position sequentially with respect to said spaced valve elements in order that one fluid may flow around one of said valve elements after another fluid is shut off with respect to flow around another of said valve elements to thereby provide for purging of said valve at the end of each operating cycle thereof, and wherein one of said valve elements is operable to prevent the purging fluid from passing through the valve during a time when products such as paint, or the like, are being dispensed through the valve.

3,575,321
SOLID PARTICULATE MATERIAL BLENDER
Glen W. Fisher, Bellevue, Wash., assignor to Fisher Flouring Mills Company, Seattle, Wash.
Filed Nov. 5, 1968, Ser. No. 773,518
Int. Cl. B67d 5/60
U.S. Cl. 222—145 15 Claims



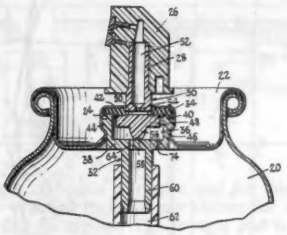
A blender for particularized solid material, such as cereal grain, comprises a discharge passageway and a plurality of segregated compartments extended into and terminating open ended within the passageway, such that a plurality of streams of material to be blended can be separately fed into the segregated compartments and therethrough into the discharge passageway.

3,575,322
METERING AEROSOL ACTUATOR WITH DOWNSTROKE DISCHARGE
Gilbert S. Jordon, Monroe, and Norman Usen, West Haverstraw, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Mar. 21, 1969, Ser. No. 809,232
Int. Cl. B65d 83/14
U.S. Cl. 222—402.20 9 Claims



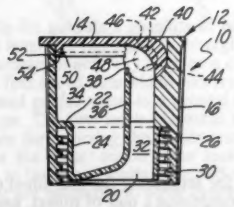
An aerosol actuator assembly providing metered aerosol flow with discharge of aerosol formulation occurring upon a downstroke of the actuator.

3,575,323
TILT-SLIDE ACTION AEROSOL VALVE
Wolf Steinman, Fairfield, Conn. assignor to Valve Corporation of America, Bridgeport, Conn.
Filed June 30, 1969, Ser. No. 843,906
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.21 6 Claims



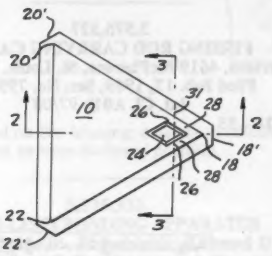
A tilting-type aerosol valve comprising a cup-shaped valve housing which is covered by a resilient annular discharge-valve seat. A hollow valve stem extends through the valve seat and carries an annular valve shoulder inside the housing. The shoulder is engageable with the seat to close off the discharge. Within the housing there is a supporting boss on the valve stem, located below the valve shoulder and engageable with an opposite wall of the valve housing to normally maintain the valve shoulder and seat engaged whereby the valve is closed. The stem can be tilted, however, because the shoulder can compress a localized area of the seat. This separates another portion of the shoulder from the seat, whereby liquid can flow from the housing, but through the hollow valve stem.

3,575,324
MEASURING CAP
Robert E. Hazard, North Kingston, R.I., assignor to Polytop Corporation, Slatersville, R.I.
Filed May 1, 1969, Ser. No. 820,896
Int. Cl. G01f *11/46*
U.S. Cl. 222—452 4 Claims



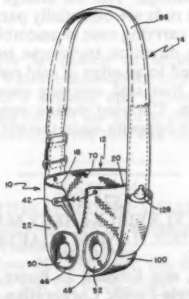
A measuring cap for use on containers is disclosed. This cap has a hollow cap body divided into an entrance chamber and a measuring chamber by an internal wall. A lid is rotatably mounted on the top of the cap body so as to be capable of being rotated between a closed position covering the top of the body and an open position in which the top of the body is uncovered. A valve member is attached to the lid so as to rotate therewith. This valve member is formed so that when the lid is in a closed position, the two chambers are in communication with one another and so that when the lid is in an open position the entrance chamber is covered.

3,575,325
INDIVIDUAL DISPENSING PACKAGE FOR PULVERULENT MATERIAL
Carl M. Leeds, 23 Stone St., Augusta, Maine, and Ralph G. Schwartz, 54 Greenwood Drive, Millburn, N.J.
Continuation of application Ser. No. 609,228, Jan. 13, 1967, now abandoned. This application May 20, 1968, Ser. No. 738,367
Int. Cl. B65d *47/10*
U.S. Cl. 222—541 2 Claims



A dispensing package for pulverulent condiments comprising a molded blister having the usual peripheral flange surrounding a vertical wall and an integral formation having exterior substantially vertical walls lying within the periphery of the blister and defining between the walls of the formation and the walls of the blister, a pair of channels for dispensing the contents of the blister, said channels being of variable cross-sectional area throughout their lineal extent and a planar closure for said blister geometrically in registry with said flange and sealed to said blister in the area of said flange. This is the first container to have a shaker outlet formed within its walls as part of the manufacturing process.

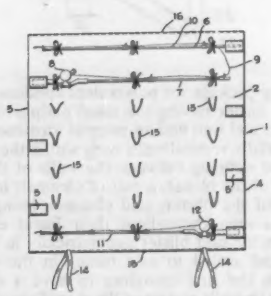
3,575,326
INFANT CARRIER
Walter G. Chappell, 1425 C. Spartan Village, East Lansing, Mich.
Filed May 27, 1968, Ser. No. 732,279
Int. Cl. A47d *13/02*
U.S. Cl. 224—6 6 Claims



An infant carrier for supporting an infant from a person's shoulder comprising a flexible pouch centrally disposed with respect to its fore-and-aft direction within and attached to a part of the length of an endless flexible shoulder sling or strap, such part of the strap as well as the part thereof that extends over the shoulder being formed of a flattened tube of fabric within which a resilient cushioning material is secured. The strap is provided in its endless extent with means for adjusting its length. A flexible hood is detachably secured to the top rear and sides of the pouch for selectively sheltering the infant's head when the hood is attached. A slide closable pocket is provided on the rear exterior of the pouch, the same having a flexible waterproof liner, and a slide fastener

closable slot opening is provided in the top front of the pouch. A bottle pocket is provided on the exterior of the strap along one side of the pouch. Leg openings in the lower front of the pouch are provided with resilient annular bands for snug embracement of the infant's thighs, and the upper margin of the pouch is inwardly foldable to lessen the height thereof while reducing the internal diameter of the upper end of the pouch. The seat and the opposite sides of the pouch are formed of a single piece of fabric having its forward and rear edges stitched respectively to single pieces of fabric constituting the front and rear of the pouch.

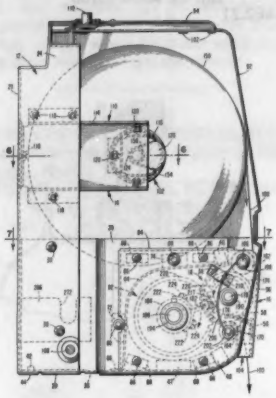
3,575,327
FISHING ROD CARRYING CASES
Toney Harrison, 4619 McPherson, St. Louis, Mo. 63108
Filed Feb. 17, 1969, Ser. No. 799,758
Int. Cl. A01k *97/08*
U.S. Cl. 224—55 **2 Claims**



A fishing rod carrying case, as best shown in FIG. 1, constructed from an essentially rectangular panel or sheet or flexible material. Pockets are mounted on said sheet, disposed along two opposite edges of said panel, and opening inwardly. Attaching means in the form of tie strings are attached to said sheet surface in proximate alignment with the pockets so that when one end of a rod or rod segment is inserted in one of the pockets the rod is secured to the sheet by means of the tie strings. The tie strings and pockets are disposed so that the rods are essentially parallel to each other when secured. The carrying case is assembled for transportation by rolling in a direction transverse to the affixed rods. Tie strings are affixed to an edge of said panel which is parallel to said rods so that said carrying case is secured in its rolled configuration. Carrying means consisting of a strap with hook means at opposite ends thereof is coupled to the rolled up case.

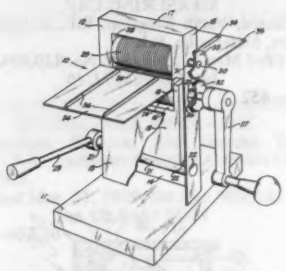
3,575,328
DISPENSER FOR FLEXIBLE SHEET MATERIAL AND A PERFORATING MECHANISM ADAPTED TO BE USED THEREIN
Paul W. Jespersen, and Edward L. Bump, Stamford, Conn., assignors to Georgia-Pacific Corporation, Portland, Oreg.
Filed Jan. 24, 1969, Ser. No. 793,808
Int. Cl. B26f *3/02*
U.S. Cl. 225—2 **3 Claims**

A mechanism for perforating a web of flexible sheet material which is adapted to be used in a flexible sheet material dispenser, said mechanism comprising; a rotatably mounted roller, a rotatably mounted knife positioned adjacent the roller and having a radially outward portion defining a cutting edge for perforating the web as the web passes between the roller and the knife, the roller being operatively connected to the knife for synchronous rotation therewith and having a slot therein for receiving the radially outward knife portion as the knife rotates past the roller, and means associated with the knife for orienting the cutting edge substantially in the direction in which the radially outward knife portion moves with respect to the web during the entrance of



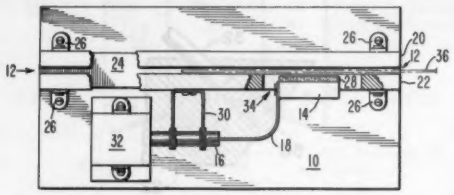
the portion into the slot so that when the portion enters the slot the cutting edge will effectively perforate the web.

3,575,329
JACKET SEPARATOR FOR FLAT STRIP CABLE
Ad R. Hannabery, 154 N. Gilbert St., La Habra, Calif. 92633
Filed Jan. 16, 1969, Ser. No. 791,677
Int. Cl. B26f *3/02;* **B23d** *19/06*
U.S. Cl. 225—97 **12 Claims**



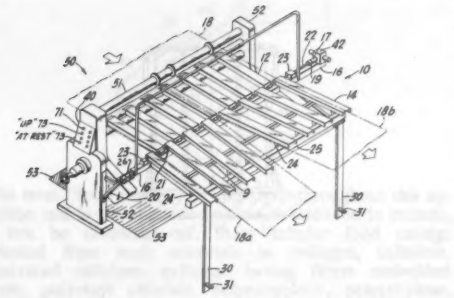
A mechanism for separating the individual conductors of a flat strip cable comprising a pair of rollers, each of which has a plurality of radially extending annular teeth, the spacing between adjacent teeth on each roller being equal to twice the distance between adjacent conductors of the flat strip cable. The individual teeth have a concave outer end and the rollers are positioned in parallel spaced relationship so that the teeth on one roller are aligned with the spaces between the teeth on the other roller. A cam mechanism, operatively coupled to one of the rollers, is operative to separate the rollers so that the cable can be positioned therebetween and to bring the rollers together whereby the teeth thereon engage the cable. The teeth operate to urge alternate conductors in opposite directions thereby separating them. A crank mechanism, connected to one or both of the rollers, is operative, upon rotation, to simultaneously feed the cable out of the rollers and separate the conductors.

3,575,330
INTERMITTENT WEB-TRANSPORTING DEVICE
Albert Sniderman, Southfield, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Aug. 28, 1969, Ser. No. 853,899
Int. Cl. B65h 17/36
U.S. Cl. 226—164 3 Claims



The disclosure embodies a friction pad for intermittently transporting a web and includes mechanism for driving the pad and directing its motion. The friction pad is resiliently mounted on a reciprocatable member and imparts to the web a driving force which is the resultant of a forward component of force from the reciprocatable member and a normal component of force resulting from the obliquely offset disposition of the pad with respect to the reciprocatable member.

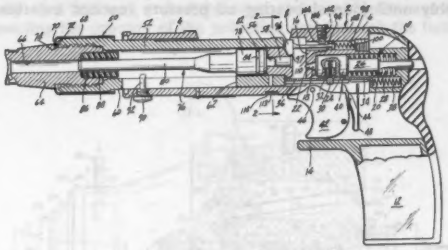
3,575,331
WEB-GUIDING APPARATUS
David Middleman, Baltimore, Md., assignor to Kopper Company, Inc.
Filed Nov. 10, 1969, Ser. No. 875,291
Int. Cl. B65h 29/58
U.S. Cl. 226—199 7 Claims



A lead-in table for guiding a plurality of horizontally moving webs into at least two horizontally diverging paths toward subsequent processing machinery such as a cutoff knife. The table includes a first set of slats which receives the webs from a slitter-scorer and guides them to a second sequentially adjoining set of slats. The first set is pivotable about an end to provide clearance for indexing the slitter-scorer or for setup of the heads on the slitter-scorer. The second set of slats guides the webs to the cutoff knife. Selected ones of the slats of the second set are pivotable to form variable-width guides corresponding to selected widths of the webs to guide them along horizontally diverging paths to the vertically displaced cutting rolls of the cutoff knife.

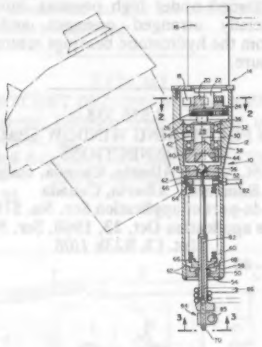
3,575,332
BARREL RETENTION MEANS FOR POWER-ACTUATED TOOLS
Lawrence J. Brunelle, East Haven, Conn., assignor to Olin Mathieson Chemical Corporation
Filed May 29, 1968, Ser. No. 733,058
Int. Cl. B25c 1/14
U.S. Cl. 227—10 5 Claims

A power-actuated fastening tool having a housing in which a barrel is telescopically received for movement between a breech-open and a breech-closed position. At least one recess is provided on the barrel member into which a detent



member, mounted on the housing, extends to releasably hold the barrel adjacent its breech-closed position.

3,575,333
BEAM-LEAD BONDING APPARATUS
Frederick W. Kulicke, Jr., Philadelphia; Edmund D. Haigler, Hatboro, and Albert Soffa, Wynnewood, Pa., assignors to Kulicke and Soffa Industries, Inc., Fort-Washington, Pa.
Filed Nov. 21, 1968, Ser. No. 777,656
Int. Cl. B23k 1/06, 5/20
U.S. Cl. 228—1 17 Claims

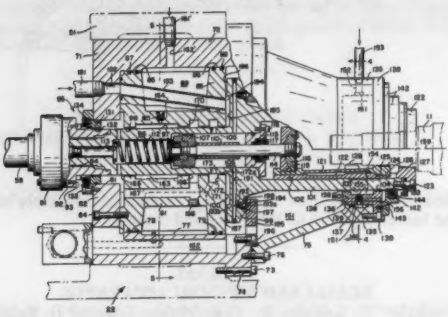


An apparatus for alternately or sequentially connecting electrical leads of a beam-lead device to a carrier. A bonding tool is mounted in a housing and is pivoted about a focal point at the working face of the tool to alternately engage the electrical leads connecting the tool and the carrier.

3,575,334
FRICTION WELDING APPARATUS
Alex F. Stamm, Rochester, Mich., assignor to Rockwell-Standard Company, Pittsburgh, Pa.
Filed June 30, 1967, Ser. No. 650,505
Int. Cl. B23k 27/00
U.S. Cl. 228—2 14 Claims

A friction welding apparatus is particularly adapted for the friction welding of relatively heavy workpieces, as for example the center section and wheel bearing end spindles of a drive axle housing, and comprises special hydrostatic bearing equipped devices for mounting the rotating workpieces. Each such device is mounted for axial displacement and comprises a rotatable arbor assembly to which the rotatable workpiece, such as a wheel bearing end spindle, is clutched and the arbor assembly is rotatably supported in a housing by two axially spaced hydrostatic journal bearings. Front and rear hydrostatic thrust bearings are provided between the arbor assembly and the housing. Oil under suitable pressure is supplied to both the journal and thrust hydrostatic bearings, and

controls are provided for attaining and maintaining suitable fluid pressure levels at these bearings. One aspect of control insures that the workpiece is not secured to the arbor assembly until journal bearing oil pressure reaches a certain



level. Oil is forced under high pressure into the bearings through specially arranged passages and after being discharged from the hydrostatic bearings returns to a sump at lowered pressure.

3,575,335

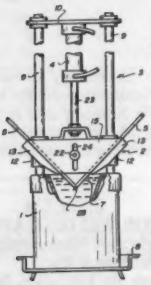
APPARATUS FOR MAKING WINDOW SPACER CORNER CONNECTIONS

Hans Baden, St. Albert, Alberta, Canada, assignor to Custom Glass Ltd., Edmonton, Alberta, Canada

Continuation-in-part of application Ser. No. 519,687, Jan. 10, 1966. This application Oct. 23, 1968, Ser. No. 769,993

Int. Cl. B23k *1/08*

U.S. Cl. 228—40 **4 Claims**



An apparatus for forming the ends of two window spacers into a mitred corner and dipping the corner in solder to effect a seal is provided. A V-notched jig receives the spacer ends to guide them into mitred, abutting relationship. A clamping jig locks the spacers in this position. The clamping jig is vertically movable to dip the corner into molten solder.

3,575,336

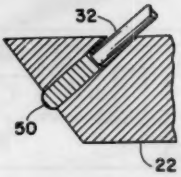
SOLDERING DEVICE

Franklin W. Booth, Hampton, Va., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration.

Filed Nov. 21, 1968, Ser. No. 777,764

Int. Cl. B23k *3/04*

U.S. Cl. 228—53 **3 Claims**



A soldering tool and method which utilizes controlled capillary attraction of the solder and the tool to regulate solder flow into and out of the tool tip and on and off the workpieces.

3,575,337

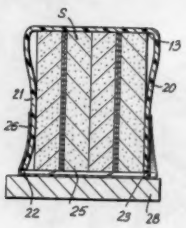
FOOD PACKAGE

Daniel Bernhardt, Palisade, N.J., assignor to Paul Richard Karan, Trustee

Filed Aug. 21, 1969, Ser. No. 851,850

Int. Cl. B65d *1/00*

U.S. Cl. 229—8 **4 Claims**



A food package, especially for sandwiches, particularly adapted to be closed by a heat-sealing operation and characterized by insulating the enclosed food from the heat inherent in forming the heat seal. The shape of the package is modified in the course of the closure operation to grip against the sides of the bread slices, thus to limit relative movement of the article and package, and assure that the contents of the sandwich are preserved intact.

3,575,338

PACKAGE COMPRISING AN OUTER CARTON BLANK AND A LINING AND PROVIDED WITH MEANS PREVENTING WEDGING

Rolf Magnus Dilot, Lund, Sweden, assignor to A B Akerlund & Rausing, Lund, Sweden

Filed Sept. 2, 1969, Ser. No. 854,575

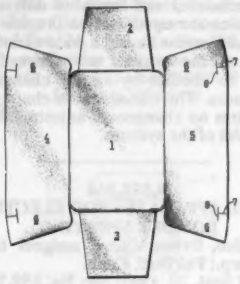
Claims priority, application Sweden, Oct. 3, 1968, 13337/68

Int. Cl. B65d *5/56, 21/02*

U.S. Cl. 229—14 **3 Claims**

Projections at the edge of traylike packages are provided to prevent wedging when stacking a plurality of packages.

The projections are made by flaps formed by slots at the

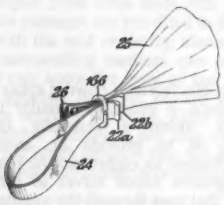


upper edge of the carton, which flaps are depressed outwardly when a plastic foil is deep-drawn into the package.

3,575,339
CASING CLOSURE

Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation

Original application Aug. 26, 1966, Ser. No. 575,462, now Patent No. 3,483,801, dated Dec. 16, 1969. Divided and this application Aug. 4, 1969, Ser. No. 862,120
Int. Cl. B65d *33/00, 33/14*
U.S. Cl. 229—54 2 Claims



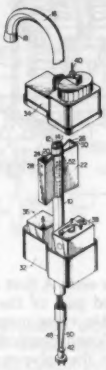
The term "food casing," as employed throughout this application and in the appended claims, is intended to include, but not be restrictive of, those tubular food casings fabricated from such materials as collagen, cellulose, regenerated cellulose, cellulose having fibers embedded therein, polyvinyl chloride, polypropylene, polyethylene, polyvinylidene chloride, and the like. These food casings are also known by those skilled in the art as "sausage casings" and are generally employed as containers or molds into which is stuffed or encased a food item, such as raw meat emulsions, meat chunks, discrete meat cuts and the like. These encased food items can then be frozen or, if desired, processed, as by cooking and curing, and items such as salami and bologna sausages, spiced meat loaves, ham loaves, hams, and the like can be obtained.

3,575,340
ANIMAL PROD

Franklin R. Klebold, Box 266, Colvis, N. Mex.

Filed Nov. 20, 1968, Ser. No. 777,228
Int. Cl. B68b *11/00*
U.S. Cl. 231—2 6 Claims

An animal prod, including a cane-shaped extruded, thermoplastic body element having channels formed longitudinally therethrough, a pair of thermoplastic clamp elements having their central portion formed about the cane and clamped thereto adjacent the hook end of the cane, and extending outwardly and terminating in perpendicular end sections overlapping one another, a generally rectangular container of thermoplastic material made up of two half sections passing over the cane and over the clamping elements and forming thereby a compartment on one side of the cane for a battery and a compartment on the opposite side of the cane for an induction coil, a switch mounted atop the container adjacent the hook end of the cane, electrical line means connecting the primary of the induction coil through the battery

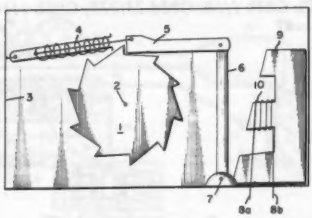


and the switch, electrical line means leading from the secondary of the induction coil downwardly through the channels formed in the cane element to the end opposite the hook portion and rigid probe elements extending from the end of the cane and connected to the second-mentioned electric line means to form a spark gap.

3,575,341
RATCHET DRIVING MECHANSIM

Stephen C. Tarver, Gillette, Wyo., assignor to Guaranteed Financial Services, Inc.

Filed Aug. 28, 1967, Ser. No. 663,887
Int. Cl. G60m *1/00*
U.S. Cl. 235—91 1 Claim



A mechanism for converting intermittent electrical current into a driving force to produce rotary mechanical motion in accurately controlled amounts, thus making it possible to turn an attached wheel the desired fraction of a single revolution by controlling the number of pulses of electric voltages applied to the device. This is accomplished by using a spring-driven pawl to drive a ratchet wheel and an electromagnetic means of retracting the pawl so that the number of retractions is dependent on the number of pulses of electric voltage applied across the solenoid of the retracting electromagnet.

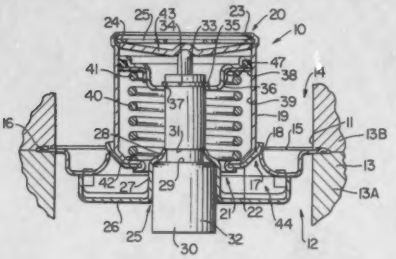
3,575,342
THERMOSTATIC VALVE CONSTRUCTION AND THE LIKE

Louis M. Puster, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed June 20, 1969, Ser. No. 835,087
Int. Cl. F01p *7/16*
U.S. Cl. 236—34 20 Claims

A thermostatic valve construction having a support means provided with a valve seat and a temperature-responsive

device having a first part fixed to the support means and having a second part movable relative thereto in response to the temperature sensed by said device. A movable valve member

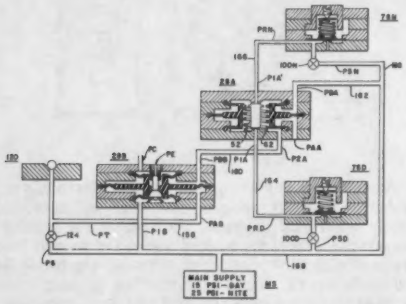


opens and closes the valve seat. A first compression spring is disposed between the fixed part of the temperature-responsive device and the movable valve member to tend to move the valve member to its closed position and a second spring means is disposed between the valve member and the movable part of the temperature-responsive device to tend to move the valve member to its open position when the second spring means is under compression whereby the movable part of the temperature-responsive device is adapted to compress the second spring means a predetermined amount before causing the valve member to open in opposition to the force of the first spring means when the temperature-responsive device senses a predetermined temperature and a particular pressure differential exists across the valve member.

3,575,343
CONDITION RESPONSIVE PARAMETER CONTROL MEANS

Kenneth G. Kreuter, and Klaus P. Mueller, Goshen, Ind., assignors to Robertshaw Controls Company, Richmond, Va.

Original application Nov. 16, 1966, Ser. No. 594,851, now Patent No. 3,528,455. Divided and this application Dec. 15, 1969, Ser. No. 884,947
Int. Cl. G05b *1/10*; G05d *23/275*; G05b *11/48*
U.S. Cl. 236—47 **9 Claims**

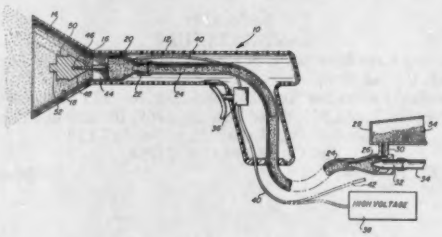


A unitary, multiple diaphragm structure is provided which includes integral valve means and flow passages, the structure being substantially entirely composed of a flexible resilient material. Additional rigid inserts are integrally molded into the basic structure to provide additional valving and seating arrangements for desired functional adaptability. The diaphragm structure is combined with hollow housing structures comprised of stacked plates or the like for mounting the peripheral portions of the multiple diaphragms of the unitary structure. Selective porting and pressure connections in the housing structures effect a family of differential pressure responsive modules or devices such as relays, comparators, and the like. A simplified temperature to pressure transducer is provided in which a compound bimetal spring selectively retains a spherical valve in an exhaust port to provide a modulated pressure output as a function of temperature changes. The transducer and family of differential pressure responsive modules are combined to provide a plurality of parameter control systems having a wide variety of operating modes. Several of the systems are convertible from one operating mode to another by merely changing the supply pressure magnitudes. The transducer is characterized by the fact that it requires no changeover adjustment to adapt it to the multiple modes of the systems.

3,575,344
NOZZLE AND APPARATUS FOR ELECTROSTATIC POWDER SPRAYING

Henry R. Angelico, Devon, Conn., assignor to Electrostatic Equipment Corp., Fairfield, Conn.

Filed Sept. 22, 1969, Ser. No. 859,709
Int. Cl. B05b *5/00*
U.S. Cl. 239—15 **9 Claims**

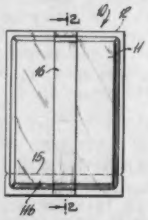


A nozzle for an electrostatic powder spray apparatus has a plug member which is generally circular in cross section mounted axially within a generally circular passage therethrough so as to provide an annular flow path therebetween. Adjacent its outlet end the plug member has a circumferential groove which serves to radially divert the powder particles that pass through the annular flow path.

3,575,345
DEODORIZER DISPENSER

Fred H. Buck, Jr, 189 Old Denville Road, Boonton Township, Morris County, N.J. 07005

Filed June 5, 1969, Ser. No. 830,708
Int. Cl. A24f *25/00*; A61l *9/04*
U.S. Cl. 239—34 **2 Claims**

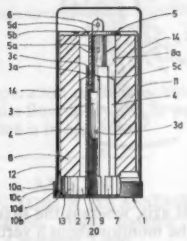


A packet is provided having sealed therein paper or the like impregnated with oil and a perfume substance. The packet has attached thereto adhesive means for affixing the packet to the wall of a bathroom, car or other enclosure surface. When the packet is opened perfume will slowly evaporate therefrom creating a pleasant odor in the surrounding air.

3,575,346
BLOCK-AND-HOLDER ARRANGEMENT AND HOLDER PERTAINING THERETO

Willy Roth, Aargau, and Rene Hauri, Baselland, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Filed Dec. 24, 1968, Ser. No. 786,718
Claims priority, application Switzerland, Jan. 26, 1968, Dec. 16, 1968, 1251/68;18697/68
Int. Cl. A24f *25/00*
U.S. Cl. 239—57 15 Claims



An arrangement comprising a block and a holder device therefor is disclosed, comprising:

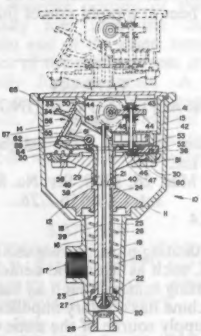
1. a block or shaped body of a material containing at least one active, for instance an insecticidal, substance which it gradually releases, e.g. in vapor form, to the medium surrounding the body, e.g. into the surrounding air, which block has at least one, preferably central, bore; and

2. the holder device for the body, having two centering means which project from both ends into the bore of the body, and wherein passages are provided in the holder device and associated with the said centering means, whereby fresh supplies of the surrounding medium can enter the central bore at one and can leave the bore at the other end laden with fluid, e.g. gaseous particles of the active substance escaping from the walls of the bore, while all the time fluid particles of the active substance are also released from the outer surface of the block directly into the medium, e.g. air, surrounding the block-and-holder arrangement.

3,575,347
ADJUSTABLE SPRINKLER

John A. Carlson, Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Mar. 11, 1969, Ser. No. 806,072
Int. Cl. B05b *3/00, 15/10*
U.S. Cl. 239—97 14 Claims

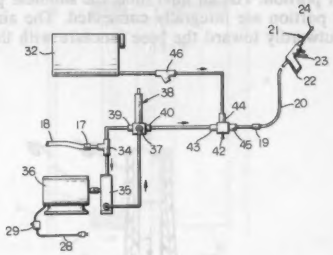


An adjustable pattern water sprinkler having improved adjusting means and an improved nozzle to effect substantially equal water distribution over a selectively variable pattern area.

3,575,348
DEVICE FOR WASHING AND RINSING

Robert H. MacKay, Fort Wayne, Ind., assignor to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Filed Sept. 9, 1968, Ser. No. 758,447
Int. Cl. B05b *9/00*
U.S. Cl. 239—127 2 Claims

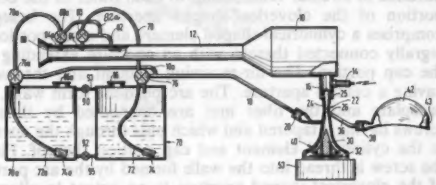


A portable cart is provided with a pump which receives water through a hose connection, and pumps this water through a pressure relief circuit to a venturi injector. The injector receives a liquid detergent or the like, and mixes this detergent with the water. The mixture is supplied to a spray nozzle which is hand operated. The ratio of detergent and water can be varied as a function of the rate that liquid is dispensed from the nozzle.

3,575,349
SPRAYING APPARATUS

Karl-Heinz Stahl, Zum Saibling 20, 7773 Nussdorf, Bodensee, and Fritz M. Fend, Thurmayrstrasse 11, 84 Regensburg, Germany, assignors to said Fend assignor to said Stahl

Filed Mar. 14, 1969, Ser. No. 807,204
Claims priority, application Germany, Mar. 20, 1968, July 16, 1968, P 17 57 005.7; P 17 82 076.7
Int. Cl. B05b *1/24*
U.S. Cl. 239—135 10 Claims



In a spraying apparatus in which a liquid is atomized in a pulsating stream of combustion gas discharged from a combustion chamber equipped with a carburetor for use of liquid fuel, a valve is interposed between the tank for the sprayed liquid and an atomizing nozzle in the exhaust pipe of the combustion chamber and is automatically closed when the pressure in the exhaust pipe is reduced below the value normally maintained by the stream of combustion gas, thus shutting off the flow of spray liquid to the hot exhaust pipe when the liquid could flow backwards into the combustion chamber or burn the operator.

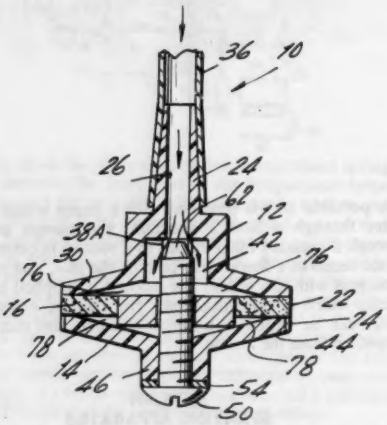
3,575,350
AIR STONE FOR AN AQUARIUM

Allan H. Willinger, 56 Gail Drive, New Rochelle, N.Y.

Filed Feb. 15, 1967, Ser. No. 616,374
Int. Cl. B01f *3/04;* A01k *63/00*
U.S. Cl. 239—145 5 Claims

An air stone for an aquarium comprising an air-receiving element, a baseplate connect to the air-receiving element and a water insoluble annular-shaped fiber mat. The fiber mat

contains a weight therein in concentric relation thereto and the mat is disposed intermediate the air-receiving element of the baseplate. The air stone is adapted to supply a uniform stream of air bubbles to the water contained in the aquarium when connected to an air supply. The air-receiving element further comprises an air inlet tube, an air inlet aperture located therein, a shoulder portion located at the base of the air inlet tube and a cap portion disposed at the base of the shoulder portion. The air inlet tube, the shoulder portion and the cap portion are integrally connected. The air inlet tube flares outwardly toward the base juncture with the shoulder



portion so that when an air supply tube from the air supply is connected to the air inlet tube the air supply tube is held in airtight relationship therewith. The air-receiving element has a cloverleaf-shaped aperture disposed in the cap portion and extending into the shoulder portion from the face of the cap portion. The cloverleaf-shaped aperture defines three arc portions in circular relationship to each other in the central portion of the cloverleaf-shaped aperture. The baseplate comprises a cylindrical-shaped element and a cap portion integrally connected thereto with an aperture extending into the cap portion. The air-receiving element and the weight having a central aperture. The arc portions form walls. The baseplate and the fiber mat are connected by threaded screws having a tapered end which pass through the aperture in the cylindrical element and cap portion thereof. Finally the screw is thread into the walls formed by the arc portions of the cloverleaf-shaped aperture to an extent to allow the passage of air over the tapered end of the screw. The air courses downwardly through the air inlet aperture into the cloverleaf-shaped aperture and thence outwardly through the fiber mat and emerging as uniform air bubbles in the water from the periphery of the fiber mat with the result that uniform aeration of the aquarium is achieved.

3,575,351

HYDRAULIC MONITOR INCORPORATING IMPROVED POWER-OPERATED AND MANUALLY OPERATED SWIVEL JOINT

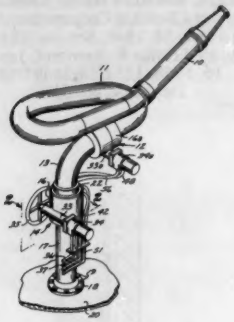
Leondras A. Warren, Whittier, Calif., assignor to Stang Hydronics Inc., Orange, Calif.

Original application Aug. 28, 1968, Ser. No. 755,919, now abandoned. Divided and this application Apr. 9, 1970, Ser. No. 26,878

Int. Cl. B05b *3/02, 15/08;* **F16h** *1/16*

U.S. Cl. 239—227 **5 Claims**

The low-friction swivel joint in the hydraulic monitor has incorporated therein a worm wheel, the latter being rotated by a worm driven by a fluid motor. A second and corresponding swivel joint is also provided, being driven by fluid which is passed through the first-mentioned joint in order that there will be no twisting of pipes or conduits. The second joint effects rotation of a portion of the monitor



about a horizontal axis, whereas the first-mentioned joint effects rotation of the monitor about a vertical axis.

3,575,352

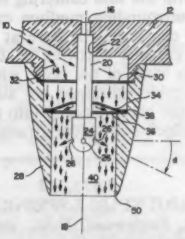
CARBONATED BEVERAGE MIXING AND DISPENSING NOZZLE ASSEMBLY

Roy L. Hall, Palos Verdes Peninsula, Calif. (8494 Cavalier Lane, Dublin, Calif., 94566), and Jacob Lee, 1624 12th Ave., Los Angeles, Calif.

Filed Dec. 23, 1968, Ser. No. 785,889

Int. Cl. B05b *7/04*

U.S. Cl. 239—434.5 **26 Claims**



A nozzle for mixing and dispensing carbonated beverages, characterized by baffles, screens and orifices adapted to ensure thorough mixing of flavoring syrup and carbon dioxide charged water while allowing increased volume of mixture to be discharged with reduced foaming. The nozzle may also be used to dispense beer at a rapid rate of flow with a minimum of foaming.

3,575,353

MACHINE FOR APPLYING COATING MATERIAL TO PIPE

Robert E. Sullivan, Houston, Tex., assignor to International Pipe Coatings, Inc.

Filed Mar. 26, 1969, Ser. No. 810,552

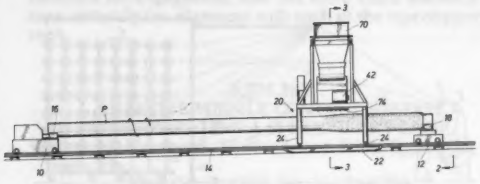
Int. Cl. B05b *7/26*

U.S. Cl. 239—314 **9 Claims**

A machine for coating pipe, making use of a dry mixture of coating materials, such as hydraulic cement, sand or gravel, and weight imparting material such as barite, iron oxide, or the like. The machine has a rotary impeller for projecting the dry mix from a supply source of the same toward the pipe to be coated, and includes moistening means, such as a water spray, through which the dry mixture passes after leaving the impeller to form a wet mixture which is impelled against the pipe.

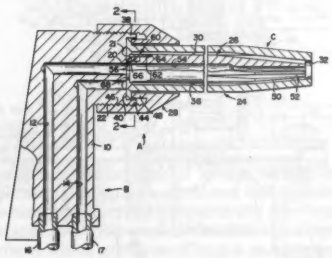
Means is provided for feeding the dry mix to the impeller in a substantially constant, regulated stream and for controlling the amount of water added whereby the consistency

of the coating can be regulated. Mechanism is provided for causing the dry mix and water to be supplied simultaneously,



automatically upon operation of the machine, and for independently regulating the flow of dry mix as well as the flow of water while the machine is in operation.

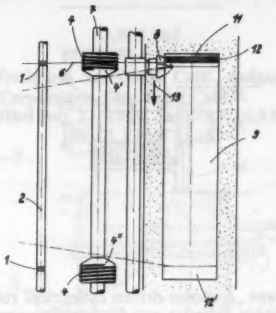
3,575,354
CUTTING TORCH TIP ASSEMBLY
Frank Hach, Jr., Euclid, Ohio, assignor to The Harris Calorific Company, Cleveland, Ohio
Continuation-in-part of application Ser. No. 785,146, Dec. 19, 1968, now abandoned. This application Nov. 12, 1969, Ser. No. 875,943
Int. Cl. B05b *7/06*
U.S. Cl. 239—422 **18 Claims**



A cutting torch tip assembly including an elongated shell member having an internal axial passageway extending longitudinally therethrough. The passageway is of uniformly decreasing diameter adjacent its outlet end, and a circumferentially extending sealing surface defines the inlet end. Positioned within the passageway is an elongated, generally cylindrical, tip insert member having an inlet end and an outlet end. The outlet end of the insert is uniformly tapered and engages the correspondingly tapered outlet end of the passageway. The remaining portion of the insert is of a diameter substantially less than the diameter of the passageway. The inlet end of the insert terminates inwardly of the sealing surface of the shell and has an axially extending, circumferentially formed recess. A circumferential flange surrounds the recess and extends generally toward the inlet end of the shell. An annular, resilient seal member is positioned in the recess and has a free end portion extending outwardly of the recess and beyond the sealing surface of the shell.

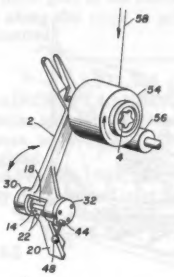
3,575,355
DEVICE FOR AUTOMATICALLY WINDING UP THE INITIAL RESERVE YARN QUANTITY ON THE END OF A SMALL TUBULAR ELEMENT OF A BOBBIN IN THE TEXTILE INDUSTRY
Michele Ratti, Luino, Italy
Filed July 26, 1968, Ser. No. 747,961
Claims priority, application Italy, Aug. 26, 1967, 19823A/67
Int. Cl. B65h *54/34*
U.S. Cl. 242—18 **3 Claims**

Apparatus for forming a single helically wound layer of reserve yarn at one end of the multilayer yarn wound on a bobbin, comprising a rotatably helically grooved drum having a conical end, the thread passing under a slide bar in a groove of the slide bar and then over the helically wound drum and about the bobbin. As the helical groove rotates,



the initial yarn is laid down on the bobbin, and when the yarn reaches the end of the helical groove and is cammed by the conical portion of the roller, the yarn is forced out of the groove in the slide bar and also descends into the usual traversing thread guide.

3,575,356
TEXTILE SWING ARM CLUTCH DEVICE
William E. Campbell, Jr., Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.
Filed Nov. 26, 1968, Ser. No. 778,949
Int. Cl. B65h *54/42, 54/52;* **F16d** *67/00*
U.S. Cl. 242—18 **6 Claims**

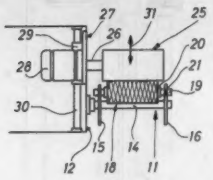


A clutch device including a unidirectional rotary sprag clutch member and controllable linkage between a rotary member and the sprag clutch member to provide free rotation of the rotary member in reverse directions or restrained rotation in the one direction of rotation of the sprag clutch member only. The clutch device is particularly designed to interrupt and dampen back and forth oscillation or bouncing of a bobbin relative to a peripherally engaged drive roll in a yarn winding and packaging operation.

3,575,357
DEVICE FOR WINDING TEXTILE THREADS
Heinrich Enneking, Karlsruhe-Waldstadt, Germany, assignor to Industrie-Werke Karlsruhe Aktiengesellschaft, Karlsruhe, Germany
Filed Jan. 31, 1969, Ser. No. 795,525
Claims priority, application Germany, Feb. 22, 1968, P 17 10 082.2
Int. Cl. B65h *54/42*
U.S. Cl. 242—18 **7 Claims**

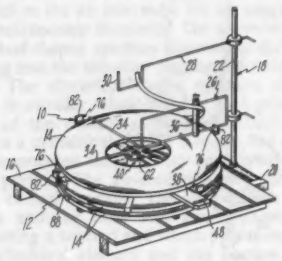
A device for winding textile threads in which the clamping spindle, upon which a bobbin cylinder is mounted, extends

with its ends beyond the bobbin and loosely engages with annular grooves in these ends the circumferences of two pairs of circular supporting discs, each pair of which is mounted on a horizontal shaft, whereby these two shafts are parallel and spaced from each other and are arranged in the same



horizontal plane. A motor-driven cylindrical roll is arranged above the bobbin cylinder and frictionally engages the same and later the bobbin formed by the thread which is conducted from above by a horizontally reciprocating thread guide—along a portion of the circumference of the cylindrical roll—and then onto said bobbin cylinder.

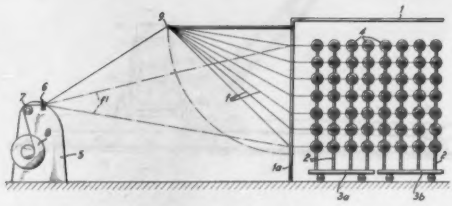
3,575,358
SUPPORT FOR COILED STOCK MATERIAL
Frank S. Manner, Waterbury, Conn., assignor to United-Carr Incorporated, Boston, Mass.
Continuation of application Ser. No. 688,592, Dec. 6, 1967, now abandoned. This application June 5, 1969, Ser. No. 835,877
Int. Cl. B65h *17/52*
U.S. Cl. 242—105 **9 Claims**



A low profile portable support for coiled stock materials has an elongated flat base with a tapered front edge and a rear hand grip. The base supports a rotatable, spoked coil carrier wherein the spokes are easily removed to facilitate the mounting of the coiled material on the carrier by a single operator.

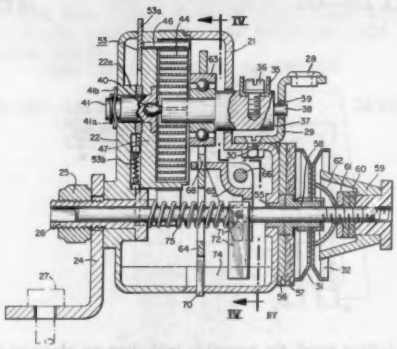
3,575,359
CREEL FOR TEXTILE MACHINES
Stefan Furst, Monchengladbach, Germany, assignor to Walter Reiners, Monchengladbach, Germany
Filed Oct. 17, 1968, Ser. No. 768,242
Claims priority, application Germany, Oct. 18, 1967, R47159
Int. Cl. B65h *49/02;* **D03j** *5/08;* **D02h** *1/00*
U.S. Cl. 242—131 **12 Claims**

Creel assembly for textile machines includes a creel having a coil-carrying frame mounted on one or more carriages movable out of a stationary portion of the creel, thread takeup means for winding a bunch of threads extending thereto from coils carried on the frame and through a front side of the stationary creel portion, and a device located between the front side of the stationary creel portion and the thread takeup means for raising at least part of the thread bunch to a height above the coil-carrying frame whereby the



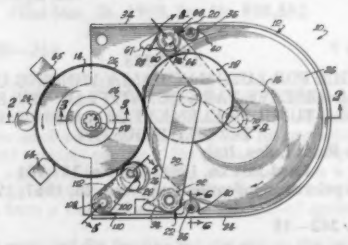
carriages are movable beneath the raised thread bunch and past the front side of the stationary creel portion.

3,575,360
UNIVERSAL COMPENSATING TENSION DEVICE
John B. Lawson, Barrington, R.I., assignor to Lawson-Hemphill, Inc., Central Falls, R.I.
Filed Nov. 20, 1968, Ser. No. 777,352
Int. Cl. B65h *59/24, 59/16*
U.S. Cl. 242—150 **3 Claims**



A device for maintaining constant tension in a moving strand of material comprising an arm moveable in response to changes in yarn tension between the device and the consuming utility, which movement is mechanically translated to alter the retarding force on the yarn which is exerted by a tension disc or wheel about which the yarn passes.

3,575,361
TAPE CARTRIDGE
Cornelius Wildhagen, 5112-1/2 Tujunga Ave., North Hollywood, Calif. 91601
Filed Oct. 21, 1968, Ser. No. 769,073
Int. Cl. G11b *15/32, 23/08*
U.S. Cl. 242—192 **3 Claims**



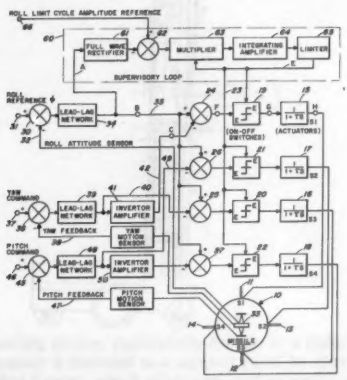
A tape cartridge or the like including a rotatably mounted drive roller for transmitting motion to two stacked tape-sup-

porting reels rotatably mounted on movable axes within said cartridge. The tape-supporting reels are biased into engagement with the drive roller to reversibly transfer a length of tape from one reel to the other. A tape-loop roller rotatably mounted for engagement with the drive roller displaces the tape vertically for alignment with each of the tape-supporting reels.

3,575,362
ADAPTIVE MISSILE CONTROL SYSTEM INCORPORATING A SUPERVISORY LOOP

William M. Hammond, Maitland, and Willis G. Martin, Orlando, Fla.

Filed Oct. 3, 1968, Ser. No. 764,704
Int. Cl. G05b *13/00;* **F42b** *15/02;* **F41g** *7/00*
U.S. Cl. 244—3.2 **5 Claims**

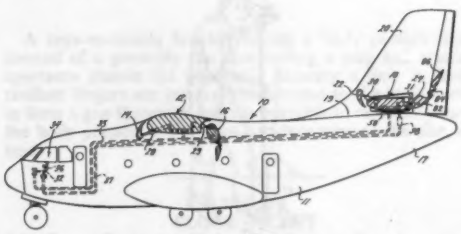


An adaptive missile control system having a supervisory loop operative during high speed and low altitude of the missile in which high dynamic pressures are effective on the control surfaces requiring small deflection actuation of the control surfaces which supervisory loop is inoperative during low speed and high altitudes of the missile to provide adaptive control to the control surfaces for equally effective missile guidance control in accordance with the speed of the missile and the density of the air through which it travels.

3,575,363
HORIZONTAL TAIL FOR AIRCRAFT

Robert B. Jenny, Kirkwood; Duane O. Carpenter; James W. Agnew, Florissant; Lloyd R. Novak, St Louis, and Vincent H. Zimmermann, Olivette, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Aug. 28, 1969, Ser. No. 853,670
Int. Cl. B64c *9/12*
U.S. Cl. 244—13 **17 Claims**

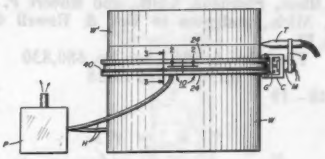


A horizontal control surface for an aircraft which can be rotated about an axis perpendicular to the longitudinal axis of the aircraft to provide pitch maneuver control The control surface includes inverted "high lift" devices such as leading edge slats and slotted flaps which can be extended by suitable means to increase the aerodynamic forces which can be generated thereby for pitch control of the aircraft.

3,575,364
FLEXIBLE TRACK

Norman L. Frederick, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed July 22, 1968, Ser. No. 746,531
Int. Cl. F16m *11/00*
U.S. Cl. 248—2 **3 Claims**

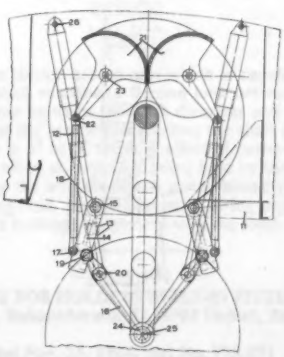


A flexible track of modular construction for mounting a tool holding carriage on to a structure or workpiece. The track is preferably fabricated from a flexible plastic material such as a fiber-resin composition to permit its being contoured into conformity with the particular configuration of the structure upon which it is to be mounted for purposes of conducting welding or machining operations. Vacuum cavities in the track base provide holding means for securing the track to the structure by application of vacuum pressure. The carriage is mounted on the flexible track by engagement of its rollers with rails extending laterally from the track base. A rack gear extending along the length of the track module is engaged by the drive gear of the carriage whereby movement of the carriage along the track is achieved and maintained under positive control.

3,575,365
AIRCRAFT LANDING GEAR

Reginald G. Austin, and John P. Gear, Yeovil, Somerset, England, assignors to Westland Aircraft Limited, Yeovil, Somerset, England

Filed Feb. 28, 1969, Ser. No. 803,302
Claims priority, application Great Britain, Mar. 14, 1968, 12387/68
Int. Cl. B64c *25/18*
U.S. Cl. 244—102 **10 Claims**



An aircraft landing gear providing extension or retraction in a substantially vertically rectilinear plane of movement comprises one or more ground-contacting members with pivotal support means, the support means being operably as-

sociated with at least two mechanical jacks and two intermediate arm members. Guiding members are pivotally attached each at one of its ends to an intermediate arm member and pivotally attached at its opposite end to meshing quadrant gears. The mechanical jacks and intermediate arm members are pivotally attached at one end to the aircraft structure.

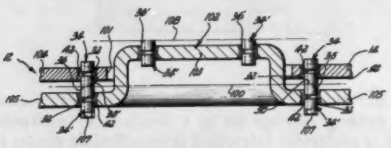
ERRATUM

For Class 248—2 see:
Patent No. 3,575,364

3,575,366
PRECISION PRODUCTION POTTING

James E. Blum, Pasadena, Calif., and Robert P. Johnson, Pontiac, Mich., assignors to Bell & Howell Company, Chicago, Ill.

Filed Nov. 6, 1967, Ser. No. 680,830
Int. Cl. G01d 15/28
U.S. Cl. 248—19 18 Claims

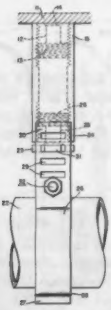


A production process for equipping a rough casting with a plurality of highly accurate surfaces at precisely predetermined locations on the casting without machining the casting. The casting includes a plurality of laterally spaced holes and is placed on a tool which supports a plurality of mounting bosses in the holes of the casting. The tool locates the bosses generally coaxial with the holes so that annular spaces are provided between the exterior of the bosses and the walls of the holes, which spaces are then filled with a bonding agent to secure the bosses to the casting. The tool positions selected faces of the bosses in desired relation to each other, preferably parallel to a reference surface defined by the tool. The tool seals an end of each annular space to prevent the bonding agent from flowing from the space as the agent cures.

3,575,367
STANDOFF HANGER ASSEMBLY

Robert Louis Welsh, and William Russell Bodine, Cherry Hill, N.J., assignors to Omark Industries, Inc., Portland, Oreg.

Filed Nov. 1, 1968, Ser. No. 772,519
Int. Cl. F16l 3/10
U.S. Cl. 248—59 7 Claims

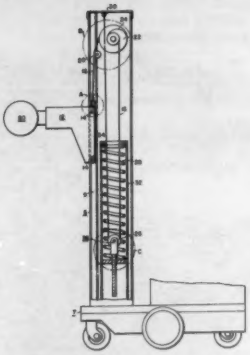


A tubular standoff hanger assembly which may be installed by means of the stud welding technique. A large cross section standoff member, which provides inherent rigidity due to its large diameter, is secured to a supporting surface by means of a stud which is welded to the supporting member wherein the stud includes a flange on one end thereof complementary with the inside configuration of the tubular standoff. Mating threads and wedging means are provided to lock the flange of the stud with the standoff to maintain the standoff in engagement with the supporting surface. An adjustable hanger bracket for pipe or the like is provided on the opposite end of the standoff and includes a resilient rubber block and flexible banding in one embodiment and a stirrup-and-yoke combination in another embodiment.

3,575,368
VERTICALLY ADJUSTABLE COUNTERBALANCING X-RAY TUBE HEAD SUSPENSION SUPPORT APPARATUS

Eugene P. Thomas, Baltimore, Md.; William E. M. Jones, and Bernard Miller, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1969, Ser. No. 794,204
Int. Cl. A47g 29/00; F16m 11/06
U.S. Cl. 248—123 1 Claim



Described is a vertically adjustable counterbalancing suspension support apparatus embodied in a floor mounted mobile X-ray tube column. The exemplified load, an X-ray tube head, is mounted on a vertical carriage movable along a mobile-based column containing an elongated circumferentially-encased helical compression spring extending vertically therein for counterbalancing the tube head and carriage. A dual suspension cable arrangement transmits the carriage load to the lower and live end of the compression spring via respective spring-pickup-compensating fusees at the top of the column and a pair of spring-travel-reducing pulley arrangements at such live end. A combined tension-equalizing-and-safety-lock member connects the support cables to the loaded carriage.

3,575,369
SUPPORT FOR DEVICES SUCH AS CAMERAS, LAMPS, AND THE LIKE

Herbert William Tetlow, 120 E. 90th St., New York, N.Y. 10028

Filed Oct. 28, 1968, Ser. No. 770,986
Int. Cl. F16m 13/04
U.S. Cl. 248—158 9 Claims

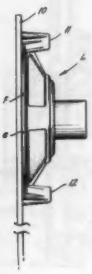
A support which is adapted to carry a device, such as a lamp, camera, or the like, which is oriented in a given

direction during use thereof. The support includes an elongated pole having a top end which carries the device as the camera, lamp, or the like. At its bottom end the pole is connected with a stirrup which is adapted to engage the floor, ground, or the like and which receives the foot of the operator, so that in this way the support structure can be steadied.

3,575,370
SNAP-IN MOUNTING FOR LOUDSPEAKERS AND THE LIKE

William J. Morris, Woodbury, and Robert C. Simmons, Pennsauken, N.J., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Aug. 29, 1969, Ser. No. 854,056
Int. Cl. F16b *19/00*
U.S. Cl. 248—201 **2 Claims**

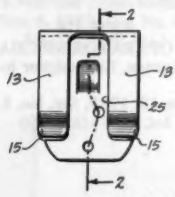


A mounting device, particularly for use in a radio cabinet. A loudspeaker is fastened to a support panel by specially serrated spring fingers, which allow easy and accurate snapping-in of speakers having gaskets of different thickness.

3,575,371
ROPE MOUNTING BRACKET

Paul A. Carlstedt, 9055 Phinney Ave. North, Seattle, Wash.

Filed Feb. 6, 1969, Ser. No. 797,091
Int. Cl. A44b *21/00*
U.S. Cl. 248—215 **2 Claims**



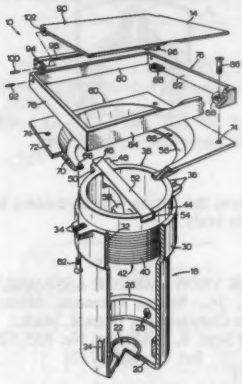
A rope-mounting bracket having a body portion that is formed of a generally flat face having a tang and a pair of apertures therein for adjustably securing a line. A pair of resilient fingers are integrally connected to the body portion to form a gap therewith and are operable to releasably secure the body portion to the cleat, rail, coaming or the like, of a boat.

3,575,372
FLOOR SOCKET

John Ernest Emberson, Unionville, Ontario, Canada, assignor to Madsen Manufacturing Limited

Filed Nov. 29, 1968, Ser. No. 779,852
Int. Cl. B61d *45/00;* **E02d** *5/80*
U.S. Cl. 248—361 **2 Claims**

An anchor socket for a gymnasium floor is formed of a tubular well with interior threads cooperating with the exterior threads of a tubular anchor assembly rotatable in the well.

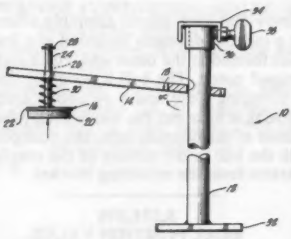


The anchor assembly has a hinged hook for securing an anchor stay.

3,575,373
HOLDDOWN DEVICE

Richard N. Reinhardt, 621 W. Yale St., Ontario, Calif., and Frank L. Ellings, 2074 White Bluff, San Dimas, Calif.

Filed Feb. 7, 1969, Ser. No. 797,653
Int. Cl. B65j *1/22*
U.S. Cl. 248—361 **4 Claims**



A holddown device has an arm which is capable of being canted on a shaft to effect a friction lock between the two. The relationship between the shaft diameter and the diameter of a hole in the arm which receives the shaft is such that approximately a 3° to 5° angle is effected between the arm and the shaft when an article is being held by the device. A pad carried by the arm through a spring-biased pin engages an article being held. The compression spring urges the arm into its angular locking engagement with the shaft.

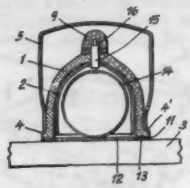
3,575,374
DEVICE FOR HOLDING BUILT-IN FITTINGS

Zoltan Csenyi, Bahnhofstrasse 61, 8902 Urdorf, Zurich, Switzerland

Filed Nov. 25, 1968, Ser. No. 778,571
Claims priority, application Switzerland, Nov. 28, 1967, 16,809/67
Int. Cl. F16b *47/00*
U.S. Cl. 248—363 **6 Claims**

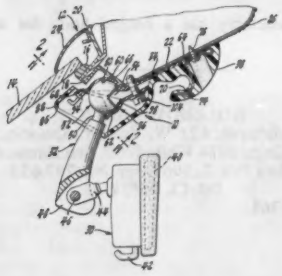
A substantially rigid bell is held by suction against a concrete form wall to position a fitting in the form of a hous-

ing snugly and sealingly fitted over the bell in place while the concrete is poured. Thereafter, the form is removed and the



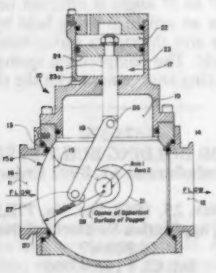
bell withdrawn from the fitting which remains in place in the hardened concrete body.

3,575,375
REAR VIEW MIRROR ASSEMBLY
Ervin H. Strem, Jr., Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 8, 1969, Ser. No. 855,929
Int. Cl. B60r *1/04*
U.S. Cl. 248—481 **4 Claims**



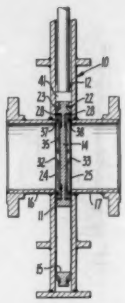
A breakaway rear view mirror assembly wherein a support arm having a mirror adjustably mounted at a lower end has a spherical ball formed at the other end which includes a transverse Vnshaped notch. The ball is normally frictionally held between a clamping plate and a mounting bracket attached interior the vehicle adjacent the windshield. After a predetermined rotation of the support arm, the clamping plate loses contact with the ball in the vicinity of the notch whereby the mirror separates from the mounting bracket.

3,575,376
DUAL POSITION VALVE
Carl D. Arvidson, Jr., Simsbury, Conn., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed Oct. 30, 1968, Ser. No. 771,958
Int. Cl. F16k *5/20, 25/00*
U.S. Cl. 251—31 **8 Claims**



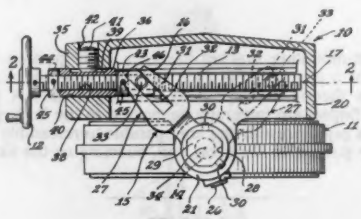
A valve is presented in which the single poppet initially seats on an upstream port and thereafter seats on a downstream port, but in which undesirable wiping of the seal by the poppet as it seats and unseats is minimized. Valves of this sort are particularly useful in rocket propellant supply systems in order to initially isolate propellants from the valve interior.

3,575,377
CLOSURE SEAL FOR GATE VALVE AND METHOD
Sydney E. Carlton, Gladstone, and Max L. Moody, Portland, Oreg., assignors to Willamette Iron and Steel Company, a Division of Guy F. Atkinson Company, Portland, Oreg.
Filed Feb. 20, 1969, Ser. No. 801,063
Int. Cl. F16k *3/18*
U.S. Cl. 251—176 **9 Claims**



This invention is concerned with the structure of the gate in a fabricated gate valve where the gate is moved vertically to the open or closed position as the case may be, and is directed primarily to the method and means for effecting the closure seal of the gate. The closing portion of the gate is counterbored in stepped relation on both faces with an annular deeper portion forming a socket adjacent the periphery of the bore. A loosely fitting sealing disc is inserted into the counterbore, without bottoming, and in sealing relation with the cut of the counterbore at its perimeter. The sealing in the closed position is accomplished by an annular O-ring in the face of the sealing disc engaging in the area of the inner end of the through flow pipe segment of the valve body and the line pressure acting on the inner face of the disc having an area larger than the area of the cross section of the flow.

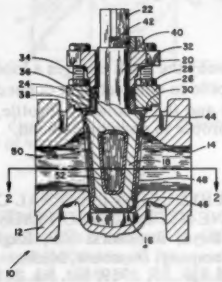
3,575,378
VALVE OPERATOR MECHANISM
Donald G. Fawkes, Aurora, Ill., assignor to Henry Pratt Company
Filed June 18, 1969, Ser. No. 834,402
Int. Cl. F16k *31/50*
U.S. Cl. 251—229 **17 Claims**



A valve operator wherein mechanism is provided for moving a valve member selectively between opened and closed positions. The valve member is provided with a valve shaft which is moved by a coupling connecting the valve shaft to a drive shaft which may be driven manually or by a motor as desired. The drive shaft is movably carried in a suitable support which is adjustably positioned and provided with as-

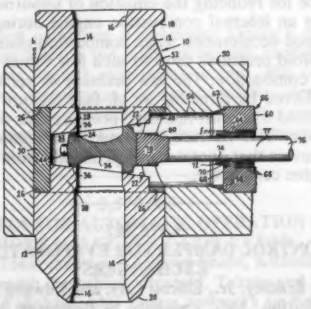
sociated stop means to coordinate the position of the drive shaft and valve shaft in at least one extreme position. The drive shaft carrying means may comprise a sleeve having an associated stop element at one end thereof for engagement by a stop element associated with the coupling means to provide the desired accurate positioning in the extreme position of the shafts. The sleeve may have a rough outer surface to permit infinite adjustability thereof in a fixed support.

3,575,379
ENCAPSULATED PLUG VALVE
Pieter F. Hoos, Greensburg, Pa., assignor to Walworth Company, New York, N.Y.
Filed Aug. 1, 1969, Ser. No. 846,860
Int. Cl. F16k 5/02
U.S. Cl. 251—314 6 Claims



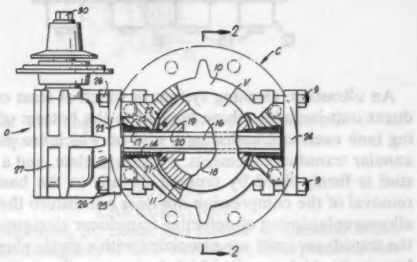
A valve with a plug with an outer surface of a resilient, low-friction material. The plug has circumferential bearing and sealing surfaces around the top and bottom thereof on the nominal plug taper, and on each side intermediate its flow ports, a pair of spaced, narrow sealing strips also on the nominal conical surface of the plug extending between, and merging with, the circumferential bearing surfaces. When the plug is in closed position, the sealing strips and surfaces seal around the top and bottom of the plug and body, and on opposite sides of the body port.

3,575,380
GATE VALVE AND METHOD OF CONSTRUCTING SAME
Chester A. Siver, 10 Fair Hill Lane, Suffield, Conn. 06078
Filed Oct. 6, 1969, Ser. No. 863,927
Int. Cl. F16k 3/12
U.S. Cl. 251—327 5 Claims



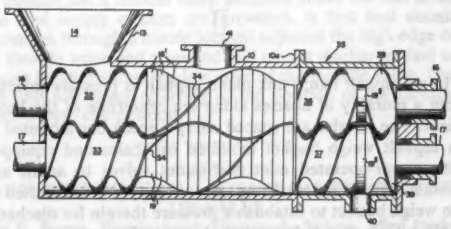
A gate valve employs a generally cylindrical sleeve on the body thereof encircling the chamber in which the gate member reciprocates to open and close the flow passage through the valve. The gate member is slidable between the open and closed positions thereof along a pair of guide rods which are secantally mounted in the sleeve and which extend within the chamber. In the method of assembly, two halves of the body are forced against a dummy gate member and the seals therebetween are tested for leakage, preferably both before and after bonding steps are effected.

3,575,381
VALVE SEAT CONSTRUCTION
William C. Gilmore, Bradford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Aug. 23, 1968, Ser. No. 754,888
Int. Cl. F16k 51/00, 1/226
U.S. Cl. 251—359 7 Claims



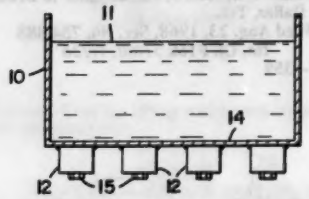
A butterfly valve in which the seat is formed of a stainless steel ring fused to the valve body by casting the body about the prepositioned ring prior to the finished machining thereof.

3,575,382
MULTIPURPOSE CONTINUOUS MIXING AND/OR KNEADING APPARATUS
Bernard A. Loomans, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.
Original application Jan. 12, 1967, Ser. No. 608,770, now Patent No. 3,423,074, dated Jan. 21, 1969. Divided and this application Nov. 7, 1968, Ser. No. 774,107
Int. Cl. B01f 7/04, 7/08
U.S. Cl. 259—6 3 Claims



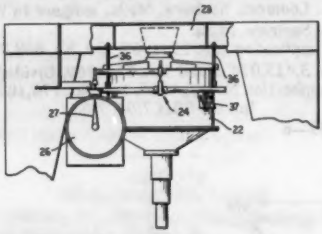
This invention relates to mixing and/or kneading machines of a type wherein two or more shafts are journaled in a mixer housing and pairs of radially engaging paddle-shaped sections are provided on the shafts, between a charge opening and a discharge opening, which are driven at the same speed and in the same direction of rotation to homogeneously mix and/or knead a variety of materials, which may be in plastic, liquid, granular or powder form, and are moved continuously in the mixer from the charge opening to the discharge opening.

3,575,383
ULTRASONIC CLEANING SYSTEM, APPARATUS AND METHOD THEREFOR
John A. Coleman, 1065 Bush St., San Francisco, Calif. 94109
Filed Jan. 13, 1969, Ser. No. 790,764
Int. Cl. B01f *11/02*; B06b *3/00*; B08b *3/10*
U.S. Cl. 259—72 9 Claims



An ultrasonic cleaning system in which at least one transducer unit includes a base bonded to the bottom of a cleaning tank each unit including a stud on which are placed two annular transducer elements, a pressure plate, and a nut. The stud is firmly fixed by tapered threads to the base so that removal of the compression nut does not disturb the stud but allows replacement of defective transducer elements. Pairs of the transducer units are associated with a single plug-in oscillator unit which supplied high frequency vibratory energy to it.

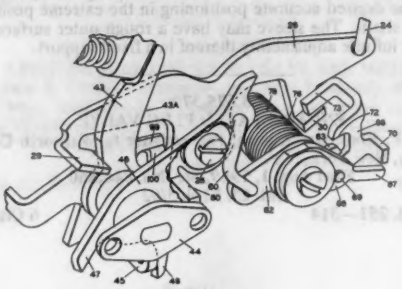
3,575,384
ASPHALT WEIGHING AND PRESSURE INJECTION MIXING SYSTEM
Richard H. Sachs, New Whiteland, Ind., assignor to American Hoist & Derrick Co., St. Paul, Minn.
Filed Nov. 25, 1968, Ser. No. 778,575
Int. Cl. B28c *7/04*
U.S. Cl. 259—154 5 Claims



In an asphalt batch mix plant, asphalt is pressure injected from a plurality of nozzles along the centerline of the batch mixer. The nozzles are spaced along a spray bar mounted to an asphalt weigh bucket mounted on scales and equipped with power-operated inlet and outlet valves to admit and contain asphalt for weighing. An air supply is connected to the weigh bucket to establish a pressure therein for discharge of the weighed asphalt through the spray bar nozzles into the mixer.

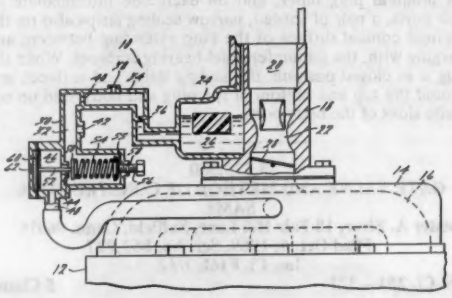
3,575,385
THROTTLE LINKAGE MECHANISM FOR A MULTI-STAGE CARBURETOR
Jesse L. Szwargulski, and Robert J. Smith, Florissant, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Apr. 10, 1969, Ser. No. 815,015
Int. Cl. F02m *11/02*
U.S. Cl. 261—23 4 Claims

Lever and linkage mechanism are disclosed for the sequential operation of the throttle of a two stage carburetor. When the engine is cold and the choke is in operation, only the primary throttle is operative. When the choke is fully opened, a latch or dog on the secondary side is released by the choke



mechanism whereby the latch engages a loose lever driven by the primary throttle to complete the connection between the primary throttle and the secondary throttle, thereby causing the secondary throttle to open on demand.

3,575,386
DEVICE FOR REDUCING INTERNAL COMBUSTION ENGINE HYDROCARBON EMISSIONS
William David Boyd, Buckhurst Hill, England, assignor to Ford Motor Company, Dearborn, Mich.
Filed Apr. 25, 1969, Ser. No. 819,329
Int. Cl. F02m *7/12*
U.S. Cl. 261—23 5 Claims

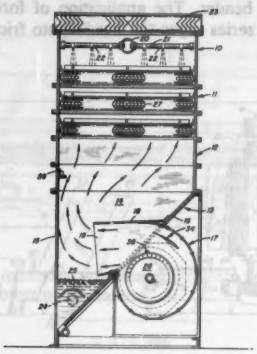


A device for reducing the emission of unburned hydrocarbons from an internal combustion engine during periods of engine speed deceleration when combustion chamber and intake manifold pressures drop to such low values as to inhibit complete combustion. The low pressure or vacuum that occurs is relieved by directing an air-fuel mixture into the intake manifold whenever manifold pressure falls to a predetermined value. This mixture is formed in a secondary charge forming device that operates independently from the conventional engine carburetor.

3,575,387
AIR CONTROL DAMPER FOR EVAPORATIVE HEAT EXCHANGERS
Wilson E. Bradley, Jr., Ellicott City, and Edward N. Schinner, Silver Spring, Md., assignors to Baltimore Aircoil Company, Inc., Baltimore, Md.
Filed Dec. 5, 1968, Ser. No. 781,348
Int. Cl. B01d *47/00*
U.S. Cl. 261—30 9 Claims

This application discloses a blow-through air fan for evaporative heat exchangers having a diffusion duct containing a moveable damper and a cooperating fixed baffle so that

in the full flow position little resistance to air is offered and in the maximum choke position the air pressure across the

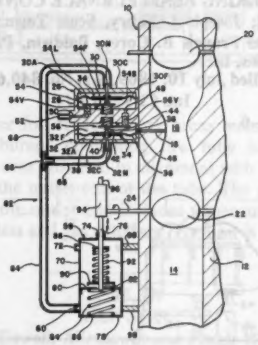


mouth of the air discharge duct is sufficiently uniform to prevent aspiration of water.

3,575,388
SEALED CARBURETOR

John Scarr, Jr., Verona, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 16, 1968, Ser. No. 753,258
Int. Cl. F02m 7/06
U.S. Cl. 261—34A **3 Claims**



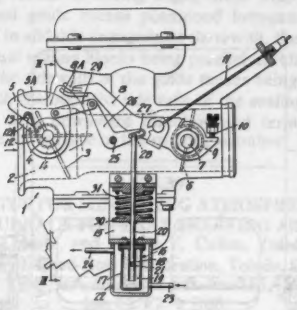
The invention comprises a carburetor having a controller in the fuel line feeding the main carburetor venturi to seal the fuel system against evaporative losses. The controller comprises two diaphragm operated valves arranged in cascade series. A throttle-actuated pump is also provided to operate the diaphragms to open the valves simultaneously and quickly for fast acceleration.

3,575,389
APPARATUS FOR AUTOMATIC OPERATION OF A CHOKE VALVE IN A CARBURETOR

Isamu Goto, Tokorozawa-shi; Minoru Inada, Kitaadachi-gun; Minoru Atsumi; Toyoshige Miyazaki, Tokyo, and Mitsuaki Ninomiya, Yokohama-shi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Kabushiki Kaisha Keihin Seisakusho, Kanagawa-ken, Japan

Filed Mar. 5, 1969, Ser. No. 804,463
Claims priority, application Japan, Mar. 5, 1968, 43/13824
Int. Cl. F02m 3/06
U.S. Cl. 261—39 **11 Claims**

A choke valve in a carburetor is controlled by a temperature sensitive element which is directly coupled with a cam in turn coupled to the choke valve so that the valve will be moved in opposite directions in accordance with temperature

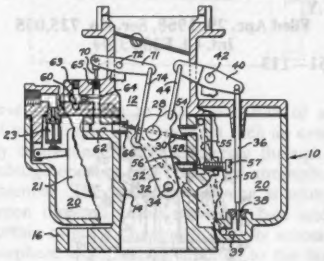


variation of the engine irrespective of the contact of an operating member of a throttle valve with the cam.

3,575,390
CARBURETION

James T. Bickhaus, St. Louis, and Harold A. Carlson, Brentwood, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed May 24, 1968, Ser. No. 731,989
Int. Cl. F02m 7/04
U.S. Cl. 261—41 **7 Claims**



A carburetor having a constant level fuel supply and a mixing conduit has a throttle valve mounted above the fuel level. Two fuel supply circuits are provided. A first fuel circuit discharges through a nozzle located adjacent the high edge of the throttle valve and a second fuel circuit discharges fuel at a point located above the low edge of the throttle valve. The high and low edges referring to the position of the throttle when in curb idle position.

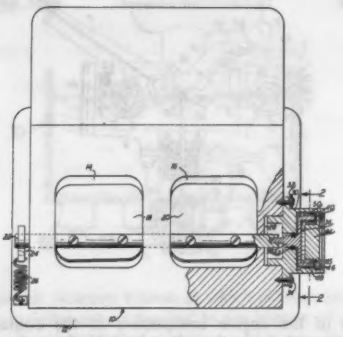
3,575,391
CARBURETOR HAVING A ROTARY DAMPER FOR THE AIR VALVE

Paul E. Braun, Birmingham; Thomas A. Nelson, Allen Park, and Charles K. Weslock, Harper Woods, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of application Ser. No. 611,906, Jan. 26, 1967, now abandoned. This application Mar. 6, 1969, Ser. No. 806,036
Int. Cl. F02m 19/12, 7/24
U.S. Cl. 261—64 **2 Claims**

A rotary damper for the air valve of an air valve carburetor. The damper comprises a rotor attached to one end of the air valve mounting shaft and rotating in a viscous fluid medium that dampens air valve oscillation without affecting normal air valve operation. Lands on the rotor and the rotor housing increase the amount of damping at any given air valve opening. Each of said lands on the rotor and housing

has a significant surface area. The air valve rotating the rotor from a position in which the lands are adjacent each other to a position in which the lands are removed from each other. The lands and the fluid medium providing an increased



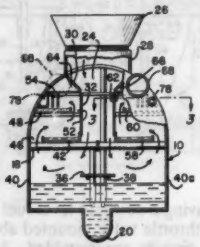
amount of damping when the lands are adjacent each other. The housing is only partially filled with the fluid medium and the land of the rotor is positioned out of the fluid and adjacent the land on the housing for an increased amount of damping.

3,575,392

DIRECT CONTACT CONDENSER

Robert J. Stoker, Phillipsburg, N.J., and Leslie L. Forster, Easton, Pa., assignors to Ingersoll-Rand Company, New York, N.Y.

Filed Apr. 29, 1968, Ser. No. 725,055
Int. Cl. F28b 3/04
U.S. Cl. 261—113 4 Claims



A direct contact condenser wherein a plurality of vertically spaced, apertured elements are disposed on each of two opposing sides of the condenser inlet. The apertured elements of each plurality cooperate to provide a tortuous steam flow passage communicating with the condenser inlet, and are provided with a cooling liquid whereby the liquid is discharged in streams through the steam flow passages and forms the primary condensing medium of the condenser.

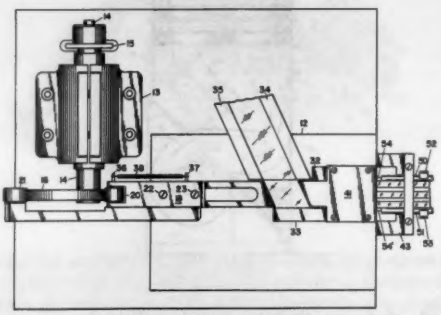
3,575,393

TRANSPORT MECHANISM AND FURNACE UTILIZED IN THE FABRICATION OF SEMICONDUCTOR DEVICES

Dale T. Kelley, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 18, 1968, Ser. No. 784,869
Int. Cl. F27b 9/14
U.S. Cl. 263—6 11 Claims

A transport mechanism and furnace for transistor header assemblies is described wherein the headers are transported in a serial manner along a fixed surface. The surface can be formed as a portion of the heat sink of a furnace used to effect soldered connections in semiconductor assemblies. As a result, the headers are heated by conduction. A pair of spaced parallel rods are slidably mounted proximate to the fixed surface and the headers are positioned therebetween. The spacing of these rods is less than the major dimension or length of the header. The application of force to the first header in the series urges the header into frictional engage-



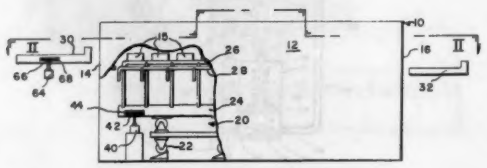
ment with the rods and by simultaneously moving the rods forward all of the headers become frictionally engaged and move through the furnace with the rods. Consequently, the header assemblies are transported without requiring a moving belt and the soldering conditions in the furnace are improved.

3,575,394

WALKING BEAM FURNACE CONTROL

Regis A. Gaj; Joseph J. Fabry, Scott Township, Allegheny County, and Francis B. Corey, Baldwin, Pa., assignors to Salen-Brosius, Inc.

Filed July 10, 1969, Ser. No. 840,653
Int. Cl. F27b 9/14
U.S. Cl. 263—6 4 Claims



A control system for a walking beam furnace including a charging mechanism, which system includes settable walking beam and charging control means, and comparator means for comparing the charge space available in the furnace with the size and spacing of the work pieces to be charged and for regulating the distance of movement of the charging mechanism in accordance with the available charge space.

3,575,395

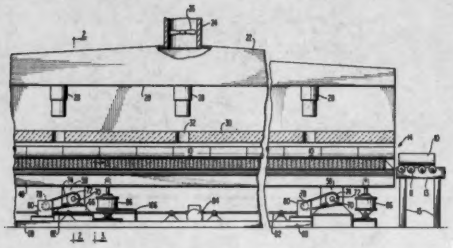
BILLET HEATING FURNACE AND CONVEYOR THEREFOR

Charles B. Gentry, Grand Rapids, Mich., assignor to Granco Equipment, Inc., Grand Rapids, Mich.

Filed Nov. 14, 1969, Ser. No. 876,667
Int. Cl. B65g 25/04; F27b 9/14
U.S. Cl. 263—6 13 Claims

This disclosure relates to a walking beam furnace for heating billets and the like in which the billets are conveyed by a central beam through a furnace chamber. Power means are provided to impart circular motion in a vertical plane to the

central beam and an independent pneumatic force biases the beam upwardly to assist the power means in the movement of



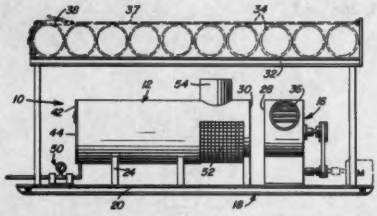
the beam, to minimize power requirements and to minimize wear on the power equipment.

3,575,396

AIR HEATER WITH SAFETY EXHAUST SYSTEM

Ernest R. Muckelrath, Tioga, N. Dak., assignor to Air Heaters, Inc.

Filed Apr. 17, 1969, Ser. No. 822,849
Int. Cl. F23l *9/00*
U.S. Cl. 263—19 **5 Claims**



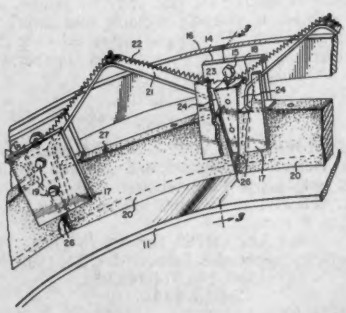
An air heater for outdoor work areas including an elongated linear burner containing fire tube having a heat discharging blower mounted in alignment with and in spaced relation from the outlet end of the tube. The portion of the tube adjacent the outlet end includes upper and lower combination air inlets and gas exhausts. The unit is skid mounted for portability.

3,575,397

KILN SEAL

Donald M. McDowell, Allentown, and Frank W. Horner, Jr., Bethlehem, Pa., assignors to Fuller Company

Filed Jan. 16, 1970, Ser. No. 3,280
Int. Cl. F27b *7/20*; F26b *25/00*
U.S. Cl. 263—32 **8 Claims**



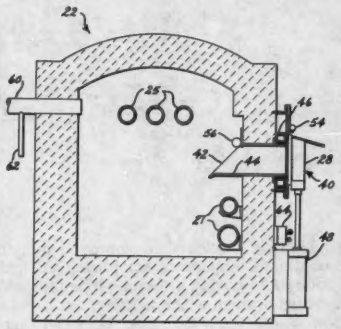
A sealing assembly for sealing the opening between the communicating members of a rotary furnace system, more particularly for sealing between a rotating member such as a kiln or dryer shell and a stationary member such as a fire hood or feed end housing, comprising a plurality of abradable sealing blocks in sliding engagement with the rotating member and guide means positioned between the sealing blocks and in slidable engagement therewith, the sidewalls of the individual sealing blocks being parallel in relation to each other and the sidewalls of the guide means being in a parallel relation with the opposed sidewalls of the sealing blocks and converging in a downward direction and terminating at a point above the surface of the rotating member.

3,575,398

APPARATUS FOR MINIMIZING ATMOSPHERE UPSET IN A FURNACE FOR HEAT TREATING ARTICLES

Joseph A. Lincoln, and Orville E. Cullen, Toledo, Ohio, assignors to Midland-Ross Corporation, Toledo, Ohio

Filed Nov. 13, 1968, Ser. No. 775,459
Int. Cl. F27b *7/00*
U.S. Cl. 263—36 **12 Claims**



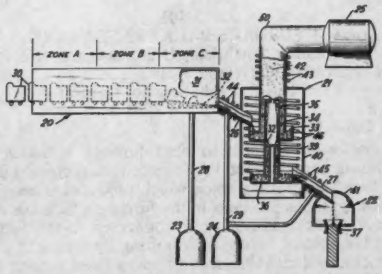
This invention relates to the prevention of atmosphere upset and to the rapid recovery from such an upset which is caused by contaminating gases entering through the workpiece discharge opening of a controlled atmosphere furnace or hot chamber. The discharge opening is protected by a flame screen directed across its outer face and by a jet stream curtain of gases directed outwardly across the opening. Atmosphere is constantly supplied to the furnace and, additionally, a restoring gas is supplied intermittently to the furnace.

3,575,399

APPARATUS FOR PURIFICATION OF COPPER

Thomas Gordon Hart, San Francisco, Calif., assignor to Phelps Dodge Corporation, New York, N.Y. Division of Ser. No. 478,612, Aug. 10, 1965, abandoned.

Filed Oct. 20, 1969, Ser. No. 870,842
Int. Cl. C22b *15/14*
U.S. Cl. 266—11 **8 Claims**



Copper is refined by melting the copper in a hydrogen atmosphere thereby dissolving into the copper substantial

amounts of oxygen impurities. The molten copper is then subjected to vacuum treatment to remove the excess hydrogen, thereby causing agitation of the molten copper to improve the removal of volatile impurities.

3,575,400

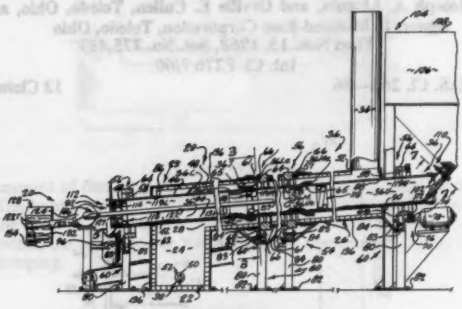
ROTARY LONGITUDINAL KILN APPARATUS

Jack G. Fisher, 11032 Magnolia Blvd., North Hollywood, Calif.

Continuation-in-part of application Ser. No. 465,474, June 21, 1965, now abandoned. This application June 20, 1968, Ser. No. 738,492

Int. Cl. C22b 5/16

U.S. Cl. 266—18 **17 Claims**



The specification discloses an improved mercury-extraction, ore-treatment, apparatus comprising an inclined longitudinal rotary kiln having a rotating longitudinal inner ore-flow tube means through which mercury ore is fed and passes spirally downwardly from the upper inlet end thereof to the lower discharge end thereof while being exteriorly subjected to hot flue gases in an outer insulated furnace extension tubular portion (nonrotating) surrounding said inner rotating ore-flow tube means and thus causing mercury in the mercury ore to be released in the form of vapor which is then extracted from within said ore-flow tube means by suction applied to longitudinal mercury vapor extraction tube means extending into said rotating ore-flow tube means from the lower end thereof and then passing through condenser means for condensing the extracted mercury vapor. The inner rotating ore-flow tube means is provided therealong with a plurality of mercury vapor and ore separating and isolating means which freely allow passage of the ore therethrough, but which virtually prevent the passage of vapor therethrough. One form of the ore-flow tube means includes novel expansion joint means compensating for thermal expansion and slight misalignment of ore-flow tube means sections along the length thereof and also provides thermal expansion and seal means between adjacent tubular furnace extensions portions and supporting wheel means passing therethrough and bearing the weight of the rotating ore-flow tube means at longitudinally spaced locations.

3,575,401

BLAST FURNACE BACKDRAFT VALVE

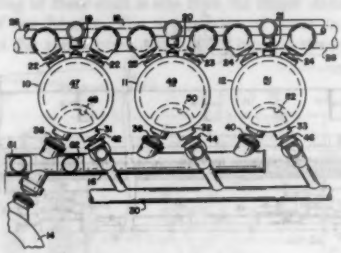
William H. Malone, Northfield, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Oct. 3, 1968, Ser. No. 764,857

Int. Cl. F27d 7/00

U.S. Cl. 266—30 **11 Claims**

The disclosure pertains to blast furnace installations in which during periods when the furnace is shut down it is connected to a backdrafting stack which produces a reversal of flow of the gaseous products in the furnace which are vented through the stack. The stack is connected to the furnace's hot air blast system during backdrafting by means of a valve which includes a movable section and a fixed section which when coupled together condition the furnace for backdrafting. Upon resumption of the furnace operation the movable valve section is withdrawn out of contact with the fixed section and the backdraft opening is closed by a valve element



thus disconnecting the stack from the hot air blast system during normal furnace operation.

3,575,402

METALLURGICAL VESSEL SUPPORTING DEVICE

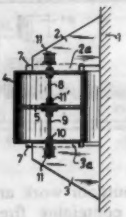
Karl-Heinrich Mahringer, Duisburg-Hamborn, and Karl-Heinz Langlitz, Mulheim(Ruhr)Heissen, Germany assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Dec. 3, 1968, Ser. No. 780,783

Claims priority, application Germany, Dec. 7, 1967, P 15 83 245.8

Int. Cl. C21c 5/42

U.S. Cl. 266—35 **8 Claims**



A fastening device for a metallurgical vessel particularly for steel mill converters which are adapted to rest on a supporting ring surrounding the vessel includes a claw or bracket element which extends outwardly from the exterior wall of the vessel and engages and holds the supporting ring. The claws are secured between the vessel and the ring by a connecting expandable metal plate or metal strip. The metal plate has a broad side which extends substantially perpendicularly to a radius of a vessel. The claws extend outwardly from above and below the ring and engage in trackways defined between guides formed at spaced locations on the ring. The vessel may also be provided with a bracket or claw which extends radially outwardly from its exterior surface and provides an anchor for one end of a connecting plate which is arranged to extend preferably substantially tangential to the outer ring. The ring is supported from the other end of the connecting plate by a bracket member which extends upwardly from the ring.

3,575,403

RUBBER-CONTAINING SPRING MEANS

Denis M. Hamel, St. Mande, and Joachim Tank, Paris, France, assignors to Pneumatiques, Caoutchouc Manufacture Et Plastiques Kleber-Colombes, Place de Valmy, Colombes, France

Filed Jan. 3, 1969, Ser. No. 788,739

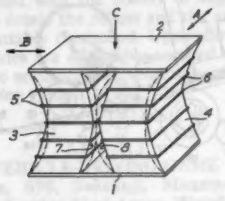
Claims priority, application France, Mar. 21, 1968, Mar. 28, 1968, 144,874;146,051

Int. Cl. F16f 1/40

U.S. Cl. 267—63 **15 Claims**

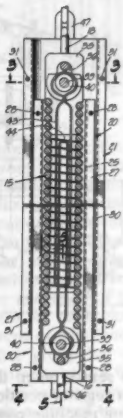
This invention relates to compression springs of the type comprising layers of rubber adhered to metal end and inter-

mediate plates, and according to the invention, at least two spring block elements are spaced horizontally and positioned so that said elements tend to approach each other and to lean



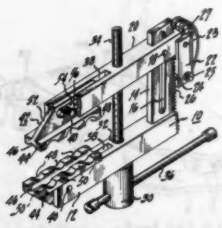
on one another when the spring flexes under a compression load, this arrangement progressively increasing the horizontal rigidity in shear as a function of the flexibility in compression.

3,575,404
PROTECTIVE SHROUD ASSEMBLY FOR INSTALLATION ABOUT STRESSED COIL SPRINGS
Herman Otto Wesch, 2265 Brentford Road, San Marino, Calif. 91108
Filed Jan. 6, 1969, Ser. No. 789,211
Int. Cl. F16f 1/12
U.S. Cl. 267—74 **5 Claims**



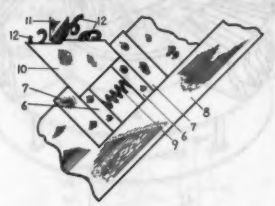
A protective assembly for coil springs to protect life and property should the springs fail while stressed. The protective shroud is installable about the spring while under stress without need for unloading the spring or using any except simple tools.

3,575,405
PARALLEL BAR CLAMPING DEVICE
Emmit B. Harding, 41 West 112th St., New York, N.Y.
Filed Aug. 28, 1968, Ser. No. 755,855
Int. Cl. B25b 5/04, 5/16
U.S. Cl. 269—258 **3 Claims**



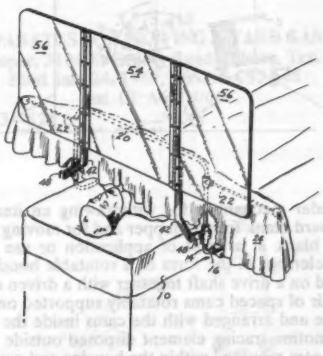
A clamping device includes a pair of jaw members, each being mounted on corresponding ends of a pair of parallel bars for pivoting and sliding motion relative to said bars.

3,575,406
MACHINIST'S PARALLELS
Gerard J. Viollet, 1619½W. 13th St., Gardena, Calif. 90249
Filed July 2, 1968, Ser. No. 750,398
Int. Cl. B23q 3/10, 3/18
U.S. Cl. 269—296 **5 Claims**



In a machinist's parallel, one or more round pockets having preferably a flat bottom and locating a resilient means which is connected preferably to another parallel having same pocket, said parallels keep the set up with precision when used between jaws of a machinist vise or a fixture.

3,575,407
ANAESTHESIOLOGY DRAPING SCREEN STRUCTURE
Simon A. A. Carson, 9222 S. E. 33rd, Mercer Island, Wash.
Filed Nov. 1, 1968, Ser. No. 772,735
Int. Cl. A61g 13/00
U.S. Cl. 269—322 **15 Claims**

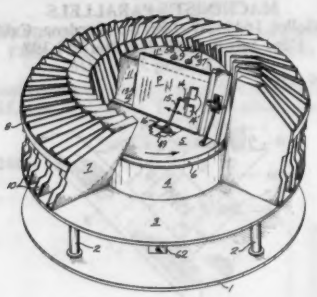


This invention relates to an anaesthesiology draping screen structure and more particularly to a structure to support (1) a first anaesthesiology draping cloth screen disposed crosswise of a surgical table and aligned at a level just caudad to the head of a patient and (2) a second anaesthesiology sterile screen. The second screen is characterized by being formed of a rigid, transparent material, such as Plexiglass or methyl methacrylate and is adjustably and detachably supported by the surgical table through (1).

3,575,408
ROTARY COLLATOR
Willis S. Cole, 16904 13th Place West, Lynnwood, Wash.
Filed Aug. 6, 1968, Ser. No. 750,620
Int. Cl. B65h 39/02
U.S. Cl. 270—58 **17 Claims**

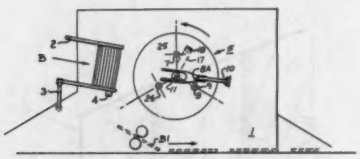
A circular platform carrying a pack of sheets standing on edge extending generally radially of the platform and leaning against a sloping backing is rotated about an upright axis so that the plane of the pack face moves successively into registry with inlet slots of narrow tilted bins arranged substantially

radially edgewise around the rotating platform. A surface sheet pusher and a feed roller move successive sheets from the face of the sheet pack into circumferentially succeeding



bins as the platform rotates so that at the end of a complete revolution of the platform, one sheet can have been fed from the pack into each of the bins.

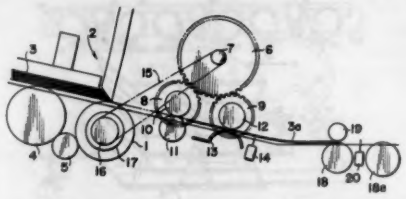
3,575,409
FEEDER MECHANISM
Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation
Filed Dec. 3, 1968, Ser. No. 780,821
Int. Cl. B65h *3/08*
U.S. Cl. 271—27 **11 Claims**



A feeder mechanism for withdrawing an item such as a paperboard blank from a hopper and for moving and depositing the blank at a point of application or use comprises a driving element in the form of a rotatable housing structure mounted on a drive shaft together with a driven element having a pair of spaced cams rotatably supported on the housing structure and arranged with the cams inside the housing and with a motion-tracing element disposed outside the housing. A fixed cam mounted within the housing and provided with a continuous cam surface constitutes a support for a cam-operated pawl, the pawl and cam surface being effective to impart a predetermined motion to one of the cam followers disposed within the housing. A guide block is fixedly mounted to the fixed cam and aids in controlling the motion of the other cam follower and a guide link disposed outside the housing and pivotally connected with the motion-tracing element is interconnected with the main drive shaft by a lost-motion connection and together with the pawls and cam followers imparts a desired operating motion to an article pickup element fixedly mounted on and movable with the motion-tracing element.

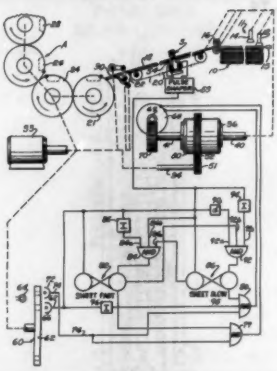
3,575,410
AUTOMATIC CARD FEEDING DEVICE
Takami Suzuki, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Sept. 11, 1968, Ser. No. 759,053
Claims priority, application Japan, Sept. 20, 1967, 42/80435
Int. Cl. B65h *3/06*
U.S. Cl. 271—41 **8 Claims**

A card is fed along a card path from a stack of cards by two pairs of feed rollers which may be rotating at different peripheral speeds. At one point in the path a single feed roller advances the card out of contact with the first pair of feed rollers and into contact with the second pair, a leaf



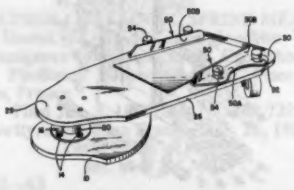
spring serving to press the card against the single feed roller and allowing slippage between the card and the single feed roller, whereby tearing or bunching of the card is avoided.

3,575,411
SHEET FEEDING MECHANISM
Frank L. Kastelic, Cleveland, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio
Filed Oct. 14, 1968, Ser. No. 767,167
Int. Cl. B65h *9/06*
U.S. Cl. 271—50 **11 Claims**



Sheet-sensing means senses when the lead edge of sheets moving in a stream to a register position from which they are fed to a sheet-processing machine pass a sensing location. If the sheets are late or early, the timing of mechanisms for separating sheets from the top of a pile and for forming and forwarding the stream is changed or the speed of the stream is adjusted in a direction to correct the out-of-time arrival of sheets.

3,575,412
SKIING PRACTICE EXERCISING DEVICE
John J. Arsenian, 1103 Linley St., Bridgeport, Conn., and George G. Arsenian, 15620 2nd Place West., Alderwood Manor, Wash.
Filed May 29, 1968, Ser. No. 732,932
Int. Cl. A63b *23/04*
U.S. Cl. 272—57 **8 Claims**



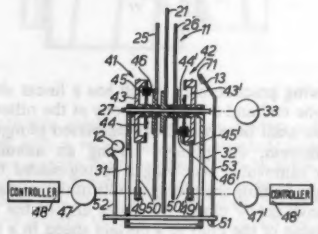
An exerciser having a base, a rigid supporting platform with forward and rear end portions, the forward end portion

of the supporting platform pivotally mounted on the base. Antifriction means are secured to the underside of the base to prevent slipping. The rear end portion of the rigid exerciser platform is mounted on a pair of floor-engaging rollers fixed to roll about an arc around the pivot axis. A braking means is associated with the rollers to regulate the body force required to rotate the rollers and the amount of brake resistance is adjustably controlled. Upstanding spaced-apart foot-retaining guides are adjustably secured to the platform and foot stops are secured to the platform adjacent the rear ends of the retaining guides.

3,575,413
VEHICLE-DRIVING GAME

Kenzo Furukawa, 698, Sokokuji, Monzen-cho, 3-chome, Karasumadori, Kamidachiuri Agaru, Higashuriu, Kamigyo-ku, Kyoto, Japan

Filed June 9, 1969, Ser. No. 831,378
Claims priority, application Japan, June 24, 1968, 43-43811
Int. Cl. A63f 9/14
U.S. Cl. 273—1 **7 Claims**



A vehicle-driving game where the street, a first group of cars and a second group of cars are pictured on separate transparent discs. A lamp behind the discs superimposes all three images, and additionally the image of a drive-controlled car, on a screen in front of the driver. Each of the three discs is separately driven, the speed of the road-bearing disc being controlled by the driver, and the speed of the two car-bearing discs being controlled by a differential gear mechanism between the road disc and each of the car discs, and a programmed control motor for each car disc. The image on the screen shows two groups of cars, each moving at a speed independent of the other group but determined through the differential by the relative speed of the roadway and the programmed controller. A photosensitive element on the driver-controlled car controls a circuit to a sounder which sounds when the image of one of the cars on one of the discs overlaps that of the driver-controlled car and blocks the light rays from the lamp.

3,575,414
WHEEL, WHIRL AND CATCH TOY

Paul F. O'Brien, 4640 N. Broadway, Indianapolis, Ind.

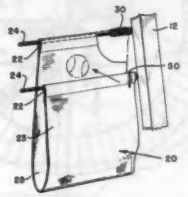
Filed Sept. 10, 1968, Ser. No. 758,737
Int. Cl. A63b 67/06
U.S. Cl. 273—96 **2 Claims**

A novel toy including a wheel and a control handle supporting a roller, the roller engaging the circular periphery of an inner edge of the wheel when rolling the same along the ground or when twirling the same in the air so to cause the same to be thrown therefrom and recaught thereupon, the wheel including a plurality of openings each of which designates a different score if the roller engages the same upon recatching the wheel.

3,575,415
POCKETED BALL-RECEIVING TARGET

Franklin G. Fulp, Rte 1, Walkertown, N.C., and Thomas J. Darlington, 2417 Elizabeth Ave., Winston-Salem, N.C.

Filed May 17, 1968, Ser. No. 730,051
Int. Cl. A63b 63/00
U.S. Cl. 273—105 **3 Claims**

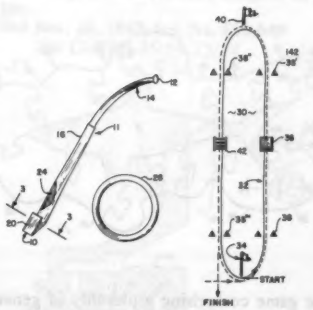


A ball-throwing game having a ball-receiving target with a front frame member supporting resiliently a plurality of horizontally extending ball-retaining pockets. A ball-collecting pouch extends from the top to the bottom of the rear side of the frame behind the pockets to receive and retain tossed balls which are not tossed within and held by the ball-retaining pockets.

3,575,416
APPARATUS FOR PLAYING A YARD GAME

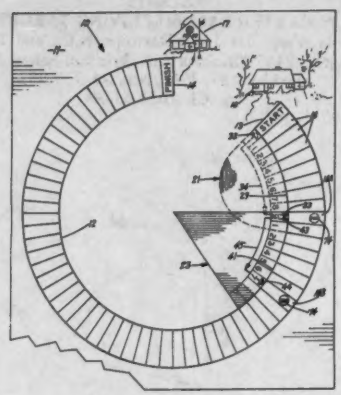
Carl H. Cooper, 3104 E. County Road, Odessa, Tex.

Filed Jan. 24, 1969, Ser. No. 793,645
Int. Cl. A63f 3/00
U.S. Cl. 273—126 **3 Claims**



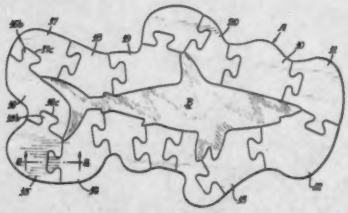
Apparatus for playing a yard game wherein a hoop is controllably rolled along a supporting surface, such as the ground, by a staff. The staff includes an elongated shaft having a handle and a guide means thereon with a longitudinally extending groove being placed between the handle and the guide means to enable the hoop to be rolled down the groove in the staff in order to commence playing the game. An obstacle course outlined by various members placed upon the ground defines a predetermined path along which the loop may travel.

3,575,417
MEASURING GAME APPARATUS
Walter E. Sylvester, 915 Avenue C West, Bismarck, N. Dak.
Filed Feb. 7, 1969, Ser. No. 797,432
Int. Cl. A63f 3/02
U.S. Cl. 273—134 10 Claims



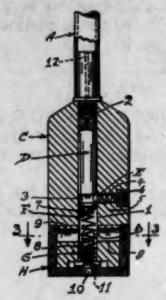
An educational game having a playing board with a circular path divided into equal radial segments between a start area and a finish area. A plurality of indicator cards having various lengths of measuring indicia are positionable on the board adjacent the path for measuring a distance along the path. The distance is recorded by placing a token in one of the segments. A selector operated by the player is used to indicate one of the cards.

3,575,418
PUZZLE ASSEMBLY WITH INNER PERIPHERY DEFINING AN IDENTIFIABLE SHAPE
Alex D. Palmer, 507 Cambridge Circle, Deerfield, Ill. 60015
Filed Apr. 22, 1969, Ser. No. 818,253
Int. Cl. A63f 9/10
U.S. Cl. 273—157 2 Claims



A puzzle game comprising a plurality of generally planar pieces, each of which is provided with a projection and a recess. The projection of each piece is capable of being interlocked with the recess of every other piece, but not necessarily in the correct sequence which would reveal a recognizable answer shape surrounded by the assembled pieces. To form the correct preselected shape in the center, each piece must be in its proper place between two correct neighboring pieces. When all of the pieces are properly interlocked, each piece being interlocked with properly chosen pieces of the set at each end, a generally ring-shaped structure is formed, and the inner periphery of the ring-shaped structure defines the outline of a preselected identifiable object.

3,575,419
GOLF SWING PRACTICE CLUB
Wallace E. Davis, 2318 Royal Oaks Drive, Alamo, Calif.
Filed May 21, 1969, Ser. No. 826,459
Int. Cl. A63b 69/36
U.S. Cl. 273—186 7 Claims



A golf swing practice club which has a linear shaft with a handle at one end and a weighted body at the other end. The body has an axial bore with a spring-biased plunger slidably mounted therein, the plunger having an annular groove therein for removably receiving a spring-biased ball detent for yieldingly holding the plunger in its initial or starting position. An anvil screw closes the outer end of the axial bore and a swinging of the club at a certain speed in a golf swing, will cause the plunger to move along the bore by centrifugal force and to strike the anvil screw with a loud click. The follow through portion of the golf swing will slow the speed of the club and permit the plunger spring to reset the plunger with a less loud click and the ball detent will yieldingly hold the plunger in its reset position ready for the next golf swing.

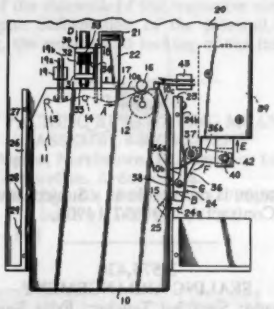
3,575,420
PIVOTABLE PLASTIC GOLF TEE
Frank E. Turner, 3 Greenfield Court, Calif., and Walter M. Smyk, San Mateo, Calif. (437 Valencia Drive, South San Francisco, Calif. 94080)
Filed Oct. 31, 1968, Ser. No. 772,188
Int. Cl. A63b 57/00
U.S. Cl. 273—207 6 Claims

A resilient plastic golf tee of one piece construction. The top elongated surface has an indented portion extending transverse to the elongated top surface thereby forming a hinge with chamfered opposed shoulders. At one end of the top surface is a ground-engaging pin and at the other end is a ball support. In use, the top portion is folded backwardly about the hinge until the chamfered shoulders engage one another to position a ball on the support in tee-off position. When the ball is struck by a club, the top portion can flex or pivot in a forward direction about the hinge axis.

3,575,421
TAPE CARTRIDGE REJECTION APPARATUS

Yoshiro Kato, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Feb. 27, 1968, Ser. No. 708,685
Claims priority, application Japan, Mar. 3, 1967, 42/17804
Int. Cl. G11b 5/00
U.S. Cl. 274—4 2 Claims

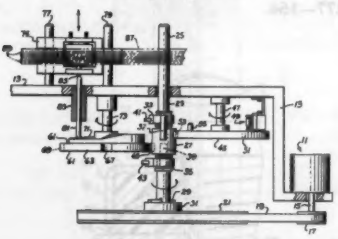


A tape cartridge rejection apparatus having a tape cartridge formed with a recess in a side thereof, a leaf spring having thereon a guide member adapted to be urged into the recess to hold in the same position, the urging force exerted to the cartridge by the leaf spring being designed to be released at any desired time, a pushing-out rod for rejecting the cartridge by pushing a forward end thereof so that a rear end of the cartridge is moved beyond a tape recorder body to some extent for thereby disengaging a pinch roller within the cartridge from its pressing contact with a capstan of the recorder whereby the pinch roller is prevented from being deformed. The rejection apparatus is operable either at the termination of a reproducing operation of each of the channels or at any desired time during the reproducing operation thereof.

3,575,422
DRIVE SYSTEM

John Robert Peltz, Warren; Clayton Lewis Stoldt, North Warren, and Nikolaus Adalbert Szeverenyi, Warren, Pa., assignors to Sylvania Electric Products, Inc.

Continuation-in-part of application Ser. No. 643,683, June 5, 1967, now abandoned. This application Feb. 28, 1969, Ser. No. 803,201
Int. Cl. G11b 5/56
U.S. Cl. 274—4 3 Claims

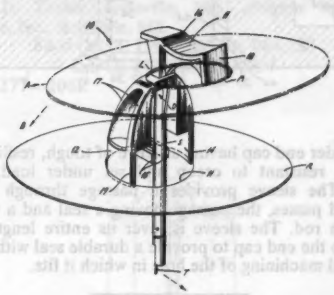


A tape cartridge player having automatic channel-changing and shutoff capabilities. The player motor drives a flywheel which is attached by a shaft to the drive capstan of the player. At the appropriate times, intermittent drive mechanisms engage the rotating shaft which couples to the intermittent drive mechanisms energy from the rotating flywheel, which energy is utilized to provide the drive motion to accomplish the aforementioned auxiliary functions. The slight damping or slowing of the flywheel and the drive capstan during these intermittent operations does not affect the system performance since the operations occur at a time when no signal is being taken from the tape.

3,575,423
SPINDLE ADAPTER FOR RECORD CHANGERS

Henry E. Johnston, Huntingdon Valley, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed June 6, 1969, Ser. No. 831,149
Int. Cl. G11b 17/04
U.S. Cl. 274—10 3 Claims

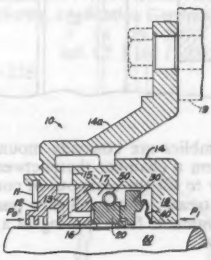


An adapter for playing large hole records on a spindle generally dimensioned for small hole records. The adapter is a one-piece body having a wide, upright stem and a forwardly projecting head. An aperture extends through the body from bottom and front parts of the stem to a rear part of the head. The bottom and front parts of the aperture are substantially wider than the spindle, while its upper rear part just admits the top of the spindle. By virtue of the large aperture portion, the adapter can be applied to the spindle with unusual facility.

3,575,424
PRESSURE BALANCED CIRCUMFERENTIAL SEAL ASSEMBLY

Ernest J. Taschenberg, Baltimore, Md., assignor to Koppers Company, Inc.

Filed Nov. 28, 1969, Ser. No. 880,649
Int. Cl. F16j 15/16, 15/54
U.S. Cl. 277—27 6 Claims

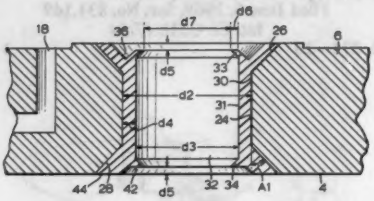


A segmental circumferential shaft seal is provided to maintain axial and radial balance by using the distribution of fluid pressure forces applied to opposing surfaces of the seal. Compensation for radial balance is also provided at the junctions of the adjoining segments. The result is a low wear, low leakage seal having substantially low uniform contact pressure against a rotating shaft regardless of the pressure ratio across the seal.

3,575,425
CYLINDER END CAP

John L. Saksun, 27 Blair Athol Crescent, Islington, Ontario, Canada

Filed Sept. 27, 1968, Ser. No. 763,323
Claims priority, application Canada, July 18, 1968, 025,481
Int. Cl. F16j *15/24, 15/32*
U.S. Cl. 277—58 3 Claims

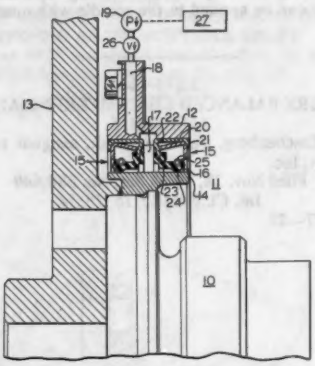


A cylinder end cap having a sleeve of tough, resilient urea-urethane, resistant to creep and set under load, molded therein. The sleeve provides a passage through which a piston rod passes, the passage having a seal and a wiper for the piston rod. The sleeve is, over its entire length, firmly bonded to the end cap to provide a durable seal without need for careful machining of the hole in which it fits.

3,575,426
PRESSURIZED SEALING ARRANGEMENT

Donald F. Durham, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 24, 1968, Ser. No. 739,270
Int. Cl. F16j *15/32*
U.S. Cl. 277—59 8 Claims



Two lip seal assemblies are coaxially mounted around a rotatable shaft to form a chamber therebetween adapted to be pressurized by air to lift the seals out of contact with the shaft. Thus, steady streams of air will flow past the seals to prevent oil or contaminants from moving in a direction opposite to such air flow.

3,575,427
COMPOSITE ABRADABLE SEAL

Edward F. Lapac, West Hartford, and Byron H. Shinn, Bolton, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 3, 1969, Ser. No. 873,226
Int. Cl. F16j *15/34*
U.S. Cl. 277—96 3 Claims

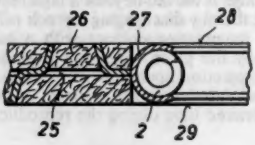
An abradable type seal for turbomachinery which utilizes a composite material consisting of a resilient bonding material and a friable insert construction to achieve the desired abradability.

This application is reportable as a Subject Invention under Government Contract AF 33(657)14903.

3,575,428
SEALING ARRANGEMENT

Ernst Fuhrmann; Siegfried Teucher; Fritz Bondrolt; Friedhelm Stecher, and Paul Vossieck, Burscheid, Germany, assignors to Goetzewerke Friedrich Goetz A. G., Burscheid, Germany

Original application May 16, 1966, Ser. No. 550,341, now Patent No. 3,519,278. Divided and this application June 13, 1969, Ser. No. 845,116
Int. Cl. F16j *15/00, 9/06;* F02f *5/00*
U.S. Cl. 277—153 3 Claims

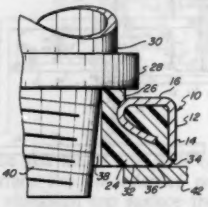


A sealing element composed of a body of resiliently deformable material, a helical coil spring disposed along one edge of the body and arranged to be laterally deformable, and a sheath having a C-shaped cross section and enclosing at least one-half of the coil circumference of the spring.

3,575,429
ELECTRICAL CONNECTOR SEALING RING

Thomas G. Spofford, Union Township, Union County, N.J., assignor to The Thomas & Betts Co., Elizabeth, N.J.

Filed Apr. 10, 1968, Ser. No. 720,129
Int. Cl. F16j *15/06*
U.S. Cl. 277—166 1 Claim



The disclosure is directed to various constructions of unitary, two-material sealing rings for preventing the entrance of moisture into protective electrical housings. These sealing rings are composed of an outer metallic ring made of steel, or other similar material, and an inner ring composed of a flexible material such as rubber. In first embodiments of the ring;

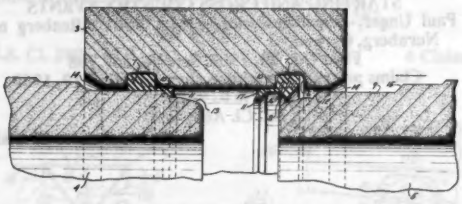
the flexible inner ring is molded directly upon, into and about the metal outer ring. In other embodiments the metal outer ring and flexible inner ring are formed as separate units and then combined by deformation of the metal outer ring in order to form a unitary, two-material sealing ring. In the first-noted form, various configurations of an inwardly extending portion of the metal ring are provided, such as to trap, hold and lock into place the flexible ring which is formed into, and about, the metal ring. In the embodiments of the ring wherein separate outer rings and inner rings are formed, special shapes of the sidewalls of the respective rings are created such that upon deformation of the sidewall, of the outer metallic ring, the seizing and locking of the inner ring is accomplished.

3,575,430

PIPE JOINT PACKING RING HAVING MEANS LIMITING ASSEMBLY MOVEMENT

Albert Earl Alpine, Norristown, Pa., assignor to Certain-Feed Products Corporation, Ardmore, Pa.

Filed Jan. 10, 1969, Ser. No. 790,320
Int. Cl. F16l *49/00, 17/02*
U.S. Cl. 277—168 **1 Claim**



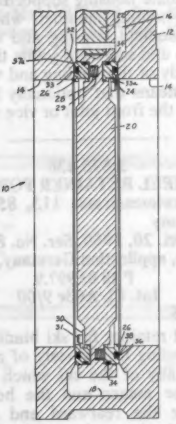
Equipment for use in connecting sections of pipe comprising spigot and socket parts, the socket part having an annular channel for receiving the main body of a packing ring, the spigot part having a shoulder presented inwardly of the joint, and the packet ring having a flange projecting inwardly of the joint from the channel in the socket part and having an enlargement at its free edge adapted to cooperate with the shoulder on the spigot part to limit assembly movement of the socket and spigot parts.

3,575,431

SEAL ASSEMBLY

Austin U. Bryant, Walnut Creek, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Aug. 19, 1968, Ser. No. 753,545
Int. Cl. F16g *15/00;, 9/00*
U.S. Cl. 277—171 **3 Claims**



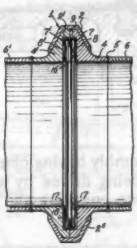
A main seal assembly for a valve comprising a resilient seal ring carried in an annular groove or recess in one working surface to seal against an opposing working surface. The inner sidewall portions of the recess are sloped in converging relationship from the bottom surface and then merge into generally parallel outer sidewall portions forming a relatively narrow opening. The seal ring is of generally triangular cross section with lateral protuberances that seal against the sloping inner sidewall portions of the recess and is mechanically retained by the narrow outer recess opening. A relatively thin outer protuberance extends freely between the outer sidewall portions of the recess to seal against the opposing working surface.

3,575,432

SEALING RING

Dudley D. Taylor, Beltsville, Md., assignor to Pressure Science, Inc., Beltsville, Md.

Filed Oct. 8, 1969, Ser. No. 864,758
Int. Cl. F16j *15/16, 15/04*
U.S. Cl. 277—206R **13 Claims**



There is disclosed a metal sealing ring being of approximate E-shape in radial cross section. The outer arms of the E have a sinuous configuration. The outer arms of the E are of essentially equal length and are from 1.5 to 3.5 times as long at the middle arm of the E. There is also disclosed the sealing ring in combination with a flange and a clamp.

3,575,433

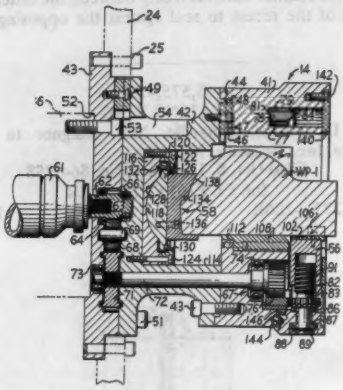
PISTON RING FOR AN INTERNAL-COMBUSTION ENGINE AND METHOD FOR MAKING SAME

Horst Beyer, Burscheid, and Hans Kling, Cologne-Lindenthal, Germany, assignors to Goetzewerke Friedrich Goetze AG, Burscheid, Germany

Filed Jan. 17, 1969, Ser. No. 791,968
Claims priority, application Germany, Jan. 20, 1968, P 16 75 300.7
Int. Cl. F16j *15/00*
U.S. Cl. 277—235 **14 Claims**

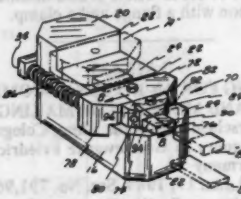
A piston ring has a bearing surface layer first mechanically applied thereto which is subsequently alloyed thereto by electron bombardment.

3,575,434
ROTARY CHUCK ASSEMBLY
Jozef Kiwalle, Peoria, and Eugene R. Martin, East Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Feb. 28, 1969, Ser. No. 803,195
Int. Cl. B23b *31/10, 31/16, 31/30*
U.S. Cl. 279—1H **7 Claims**



A rotary chuck assembly having chucking members or jaws with rotary gearing being driven by a motor to operate the chucking members into engaging and releasing relation with a workpiece.

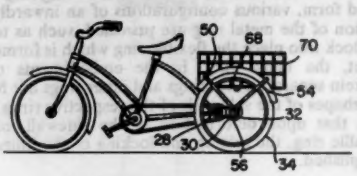
3,575,435
ATTACHMENTS FOR LATHE JAWS
Savarian F. Lemanski, Detroit, Mich. (c/o 2148 Collins Ave., Utica, Mich.)
Filed May 29, 1968, Ser. No. 732,986
Int. Cl. B23b *31/10*
U.S. Cl. 279—123 **4 Claims**



A set of attachments for the chuck of an engine lathe, to assist the jaws in gripping and positioning the workpiece. The attachments disclosed include two forms of soft jaws that attach on hard jaws, a set of shims for gripping and positioning a ring-shaped workpiece on stepped jaws, two forms of stops for positioning the end of the workpiece in selected positions in the jaws, and an adapter having a friction surface and magnetic means for engaging and longitudinally supporting the end of a workpiece that cannot normally be engaged between the jaws.

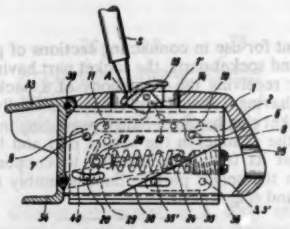
3,575,436
BASKET-CARRYING FRAME FOR THREE-WHEELED VEHICLES
Raymond E. Templeton, Rte. 2, Box 766, Peoria, Ariz.
Filed Oct. 26, 1967, Ser. No. 678,423
Int. Cl. B62k *13/04*; B62j *7/04*
U.S. Cl. 280—7.15 **1 Claim**

A basket-carrying frame for three-wheeled vehicles comprising a frame for converting a bicycle to a tricycle which includes an auxiliary frame having two pairs of forks disposed in straddling relation with two rear wheels of a converted bicycle, said auxiliary frame also comprising a pair of horizontally disposed crossmembers disposed between the



said pairs of forks, said crossmembers being substantially on a common plane to support the bottom portion of a luggage basket, or the like.

3,575,437
RELEASABLE HEEL RETAINER FOR SKI BINDING WITH MEANS FOR OPTIONAL SETTING FOR STARTING AND CROSS COUNTRY EVENTS
Paul Unger, Bruckwiesenstrasse 113, 8501 Altenberg near Nurnberg, Germany
Filed Oct. 20, 1969, Ser. No. 867,798
Claims priority, application Germany, Oct. 19, 1968, P 18 03 996.8
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 **16 Claims**

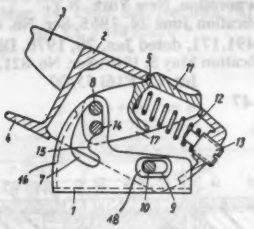


Releasable heel retainer for a ski binding that can be optionally set for starts or cross-country runs and which is guided on a stationary base portion for rocking movement and is also displaceable relative thereto, and which comprises a base, an intermediate housing supporting an outer housing that carries a sole-holding member, where the connection between the intermediate housing and the base portion is defined by forward and rearward joints that extend horizontally and transversely of the binding and which can be raised from the base by means that optionally free either the rear joint while latching the front joint or vice versa.

3,575,438
RELEASING HEEL RETAINER FOR SKI BINDING
Paul Unger, Bruckwiesenstrasse 113, 8501 Altenberg near Nurnberg, Germany
Filed Oct. 20, 1969, Ser. No. 867,767
Claims priority, application Germany, Oct. 19, 1968, P 18 03 997.9
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 **10 Claims**

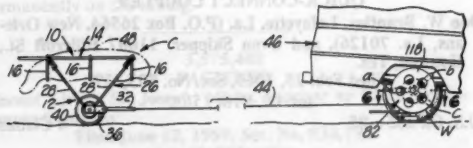
A releasable heel retainer for ski binding that is rockable about an axis extending transversely of a fixed base that is disposed longitudinally of the ski which has a linked joint between the release means and the housing of the sole retainer and where the rearward end of the housing is slidably guided on the base where it is also pivotally linked and protected against rising from the base and which furthermore has a spring biased releasable latch that fixes the heel retainer in open position and where the front linkage or joint

of the heel retainer is a sliding joint on the base part, whereby the housing that carries the sole-retaining part is



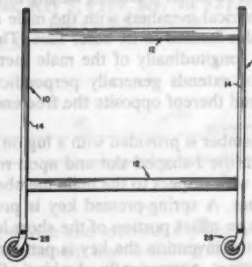
guided by means of sliding members such as bolts, pins or projections in slots on the base.

3,575,439
LOAD CONVEYING CART
Abbie M. Lusk, P.O. Box 7644, Riverside, Calif.
Filed June 26, 1968, Ser. No. 740,382
Int. Cl. B62b *1/10*
U.S. Cl. 280—47.3 **4 Claims**



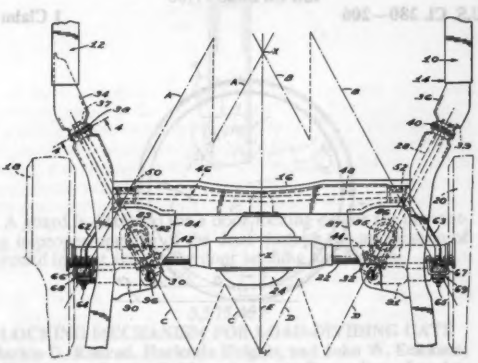
A carrying cart useful for game animal retrieval purposes, and a winch useful for pulling the cart. The cart is of narrow, lightweight, open frame construction and has a detachable load basket supported at about waist height by an undercarriage. It rolls on a single wheel mounted at the center of an axle running the full width of the cart. The winch is attachable to the hub of a jacked-up drive wheel of an automobile where it operates coactively with the wheel hub to pull the loaded cart by means of a connecting cable.

3,575,440
SERVING CART
Ralph B. Lay, Columbus, Ind., assignor to Hamilton Cosco Inc., Columbus, Ind.
Original application May 19, 1968, Ser. No. 733,174. Divided and this application Sept. 16, 1969, Ser. No. 858,359
Int. Cl. B62b *5/00*
U.S. Cl. 280—79.3 **3 Claims**



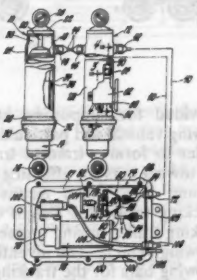
A serving cart in which there is a pair of end frames each formed from a pair of wheeled uprights interconnected at their upper and lower ends by upper and lower transverse stretches. A shelf is interconnected to said end frames and has a peripheral molding attached thereto and extending therearound. Corner brackets underlie said shelf and are connected to said molding and to end braces which also underlie said shelf in abutting relation to said brackets and molding. Fastening elements extend through aligned openings in the brackets, end braces, and molding for reception in said uprights to connect said shelf to said uprights.

3,575,441
VEHICLE SUSPENSION
Klaus H. Arning, Birmingham, and Robert H. Transou, Jr., Detroit, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 23, 1968, Ser. No. 785,875
Int. Cl. B60g *11/50*
U.S. Cl. 280—124 **15 Claims**



A rear suspension system for a motor vehicle having a rigid axle housing and a pair of lower suspension arms interconnecting the axle housing with the vehicle chassis. The arms are angled forwardly and outwardly. A stabilizer bar has its center portion extending transversely of the vehicle body and connected to the vehicle frame. The ends of the bar form integral upper suspension arms that extend rearwardly and outwardly and are secured to the axle housing. The stabilizer bar, in combination with the splayed lower arms, controls body roll, lateral body movement and axle windup.

3,575,442
SEMI-AUTOMATIC DOOR ACTUATED VEHICLE LEVELING SYSTEM
James O. Elliott, Xenia, and James E. Whelan, Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed July 14, 1969, Ser. No. 841,266
Int. Cl. B60g *17/00*
U.S. Cl. 280—124 **6 Claims**



In the preferred form, a vehicle leveling system having an electrically motor driven compressor that is directly commu-

nicated with a pair of fluid springs for maintaining a predetermined height relationship between the sprung and unsprung mass of a vehicle. A controller includes vehicle door operated light switches normally opened when the vehicle doors are closed. When the door is opened and closed a hold circuit is closed for a relay-operated motor energization switch. The hold circuit includes a normally closed pressure responsive switch. Following a predetermined pump-up phase a mechanically operated height controller exhausts the spring and conditions the pressure switch to open the hold circuit to deenergize the electric motor.

3,575,443

GO GO WHEEL COASTER

Ralph Aguilar, Glascow-Cardiff By Sea, Calif. (1068 Santa Fe Drive, Encinnitas, Calif. 92024)

Filed Oct. 24, 1968, Ser. No. 770,260
Int. Cl. B62b *11/00*
U.S. Cl. 280—206 **1 Claim**

An amusement ride device for a child or other person. The device including a rotatable outer tire and an inside hoop which is carried by roller bearing means within the tire, the hoop including a transverse handlebar, leg stretch bar against which a rider within the hoop may secure himself by bracing, the hoop remaining in a nonrotating position while the tire rotates during travel across the ground.

3,575,444

SEMITRAILER DOLLY AND TRACKING TRAILER FOR FREIGHT CONTAINERS

James Veenema, 245 Arbor Road, Franklin Lakes, N.J.; Fred Muller, Jr., 120 Ridgedale Ave, Florham Park, N.J., and John A. Johnson, 9 Sheridan Drive, Short Hills, N.J.

Filed Nov. 29, 1968, Ser. No. 779,708
Int. Cl. B62d *53/00*
U.S. Cl. 280—408 **11 Claims**

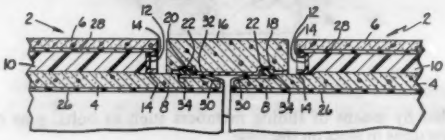
A dolly is provided for supporting and connecting a semitrailer to a towing vehicle and particularly to a preceding semitrailer or trailer to form a train of trailers. Each dolly comprises crossed towing bars for effecting absolute tracking of a semitrailer and fifth wheel means for engaging a semitrailer. A tracking trailer for freight containers is also provided, the tracking trailer having crossed towing bars for connection to a towing vehicle. The invention also resides in the provision of towing bars for the tracking trailer and dolly of a size and weight which permits for manual handling thereof. In addition, guide plates are provided which are substantially triangular in cross section and are adapted to align and position containers on a semitrailer or trailer.

3,575,445

THERMALLY INSULATED PIPE

David Walter French, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Original application June 24, 1965, Ser. No. 466,554, now Patent No. 3,491,171, dated Jan. 20, 1970. Divided and this application May 5, 1969, Ser. No. 821,880
Int. Cl. F16l *55/00*
U.S. Cl. 285—47 **5 Claims**



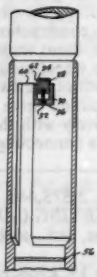
A thermally insulated pipe comprising an outer and inner asbestos-cement pipe held in supported and spaced relationship by thermally insulated material.

3,575,446

QUICK-CONNECT COUPLER

Don W. Brantley, Lafayette, La. (P.O. Box 26564, New Orleans, La. 70126), and Uvon Skipper, 11607 Hillcroft St., Houston, Tex.

Filed Feb. 28, 1969, Ser. No. 803,327
Int. Cl. F16l *15/00*
U.S. Cl. 285—85 **4 Claims**



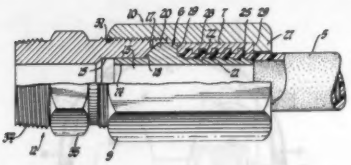
A quick-connect coupler including axially interfitting male and female cylindrical members with the male member having a J-shaped slot formed in its outer face. The long leg of the slot extends longitudinally of the male member and the short leg thereof extends generally perpendicularly to the long leg at the end thereof opposite the free end of the male member.

The female member is provided with a lug on its inner face which engages in the J-shaped slot and upon rotation of the female member with respect to the male member secures the members together. A spring-pressed key is provided in the lug to engage in an offset portion of the short leg of the slot. In one form of the invention the key is permanently held in the offset portion permanently locking the members together. In another form the key and offset portion are shaped so that reverse torque applied to the members will cause the key to retract from locking position. In still another form the key is provided with an externally actuated cam for retracting the key.

3,575,447
TUBE FITTING

Ralph H. Merkle, Brighton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 24, 1969, Ser. No. 809,747
Int. Cl. F16l *33/20*
U.S. Cl. 285—248 4 Claims

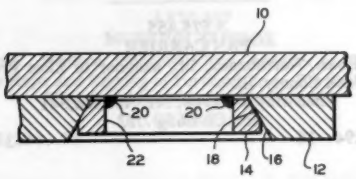


A fitting, particularly suited for use with nylon and other polymer tubing for air brake systems and the like, comprises a coupling insert with an externally ridges insert portion extending into the tube and a coupling portion extending from the end of the tube; an internally ridged sleeve tightly enclosing the tube around the insert portion and having one end bearing against a shoulder on the coupling portion; and a nut bearing against the other end of the sleeve and threaded to engage a fitting to which the coupling portion is removably connected. The insert portion is expanded to fix the fitting permanently on the tubing.

3,575,448
FASTENER

Vincent Licari, St. Joseph, Mich., assignor to Clark Equipment Company

Filed June 12, 1969, Ser. No. 832,793
Int. Cl. F16b *4/00*
U.S. Cl. 287—189.36B 3 Claims

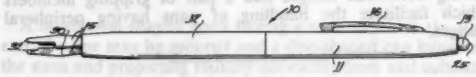


A fastener consisting of two members secured together by welding, with a third member securely clamped between the two members by the shrinkage of the weld as it cools.

3,575,449
KNOT-TYING DEVICE AND METHOD

Charles W. Browning, 4645 E. 57th St., Tulsa, Okla.

Filed May 5, 1969, Ser. No. 821,658
Int. Cl. B65h *69/04*
U.S. Cl. 289—1.5 9 Claims

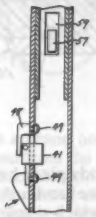


A knot-tying device and method, especially for use in the knotting of monofilament line to fishing lures or hooks, with the device including a casing housing a pushrod or stem which is secured to or integral with a pair of outwardly sprung blades having prongs or ends adapted to be projected outwardly of the casing. The prongs or ends include cutting blades that terminate in offset clamping jaw ends; the blades having a squeeze ring movable thereover located within the casing to move the ends together as the blades are retracted into the casing. The line is initially threaded through the eye of the hook with the end clamped in the jaws, the line is wound several times around the casing, the end of the casing is passed through the loop in the line, and the end of the line is released and the device withdrawn so the knot formed can be tightened.

3,575,450
IMPACT GUARD

Albert F. Lang, 20 Emerson Terrace, Bloomfield, N.J.

Filed May 19, 1969, Ser. No. 825,543
Int. Cl. E05c *19/00*; E05b *65/44*, *13/00*
U.S. Cl. 292—1 10 Claims

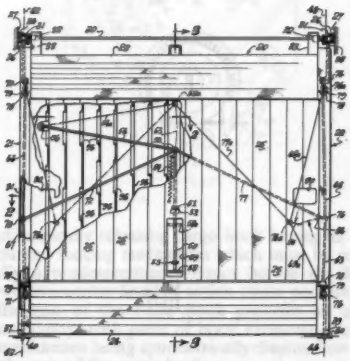


A guard is disclosed for a door-locking device for preventing improper opening of the door through the application of forceful impact against the door latching mechanism.

3,575,451
LOCKING MECHANISM FOR LOAD-DIVIDING GATE

Marion G. Konrad, Hacienda Heights, and John W. Erickson, Huntington Beach, Calif., assignors to Preco, Inc., Los Angeles, Calif.

Filed Aug. 7, 1968, Ser. No. 750,822
Int. Cl. E05c *9/06*
U.S. Cl. 292—35 2 Claims

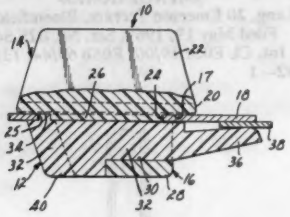


Locking pins for load-dividing gates in freight vehicles and the like are operated by a linkage that includes a coupling member movable parallel to the plane of the gate and laterally of the axis of movement of the locking pin. The member is coupled by pivoted links to the pin and to a pivot mounted on the gate. That pivot may be fixed on the gate, or may be carried by a second pin, oppositely projectable along the same axis as the first. In gate locking position of the pins, the links typically are essentially parallel, positively locking the pins in projected positions. All pins can typically be operated from the center of the gate or from either gate edge, the links themselves providing operating handles in many forms of the invention.

3,575,452
PANEL LATCH

Jack P. Blomgren, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 14, 1969, Ser. No. 815,702
Int. Cl. E05c *3/04*
U.S. Cl. 292—202 6 Claims

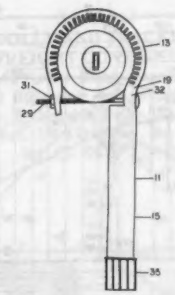


A latch formed of a body piece having a bearing surface to contact one face of a panel and a shank to project through a circular panel aperture which shank is formed with a diametrical aperture, and a crosspiece inserted into the shank aperture to bear on the opposed face of a panel and having a tongue to engage a second panel upon rotation of the latch and a locking tab to extend into a said panel aperture along the body piece shank to positively retain the latch on a panel from movement along its axis.

3,575,453
EASY DOOR OPENER

Philip M. Hohl, Punta Gorda, Fla. (5361 Virgilia, P.O. Box 67, Troy, Mich. 48084)

Filed Mar. 16, 1970, Ser. No. 19,961
Int. Cl. E05b *3/00, 1/00*
U.S. Cl. 292—336.3 3 Claims

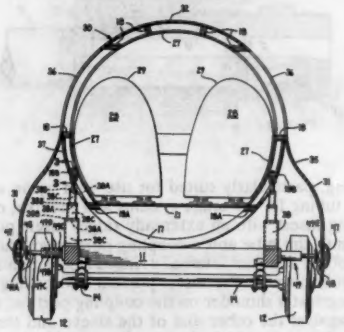


Easy door opener with a door knob grip section and a lever handle section. The door knob grip section is a resilient curved elongated thin element with inner and outer ends, almost closed on itself and having an inverted U-shaped cross section, serrated with teeth on opposed parallel edges. The inner end terminates in an outwardly extending lever handle which is joined to the inner end at a junction, and extending over this junction to the outer end of the grip section is a threaded member whereby the curved grip section can be placed around a door knob and the threaded member fastened so that the resilient grip section closes in on the handle. The serrated teeth grip the contours of the door knob and the user can readily open the door with the lever handle.

3,575,454
BUMPER SHOCK-ABSORBING VEHICLE

Martha C. Meeker, 5768 N. Ewing, Indianapolis, Ind.

Continuation-in-part of application Ser. No. 556,187, June 8, 1966, now abandoned. This application Apr. 1, 1969, Ser. No. 837,968
Int. Cl. B60r *19/08*; B61f *19/04*; B62d *23/00*
U.S. Cl. 293—62 2 Claims

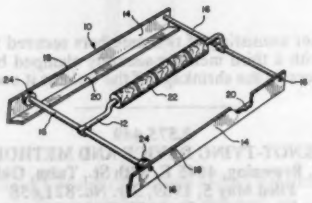


A vehicle operable on conventional roads under driver control and on a monorail system under other than driver control. The vehicle has a body mounted to a frame by frangible members. Wheels are rotatably mounted to the frame for supporting the vehicle. Plungers having spring-biased pistons are mounted to the frame and are aligned with rubber grommets secured to a shell extending down from and surrounding the body. A rubber bumper is mounted to the outside surface of the shell. A rail-engaging carriage is secured to the underside of the vehicle.

3,575,455
PAN CARRIER

Roy W. Bloch, Northbrook, Ill., assignor to Ekco Products, Inc.,, Cook County, Ill.

Filed May 28, 1969, Ser. No. 828,541
Int. Cl. B65g *7/12*
U.S. Cl. 294—16 3 Claims



A pan carrier has a pair of opposed pan-engaging members having horizontal flanges and a pair of gripping members which facilitate the handling of pans having peripheral flanges.

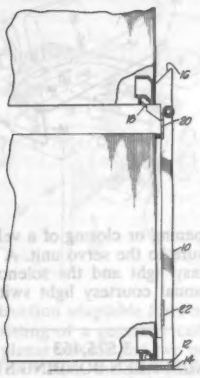
3,575,456
MODULAR SHIPPING AND STORAGE UNITS

Therian E. Austin, 646 W. Walnut Ave., El Segundo, Calif.

Filed July 23, 1969, Ser. No. 843,599
Int. Cl. A66c *1/00*
U.S. Cl. 294—67 6 Claims

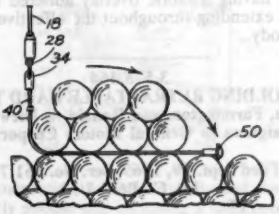
A modular and expandable device for multiple stacking of sheet metal rooftop air conditioning units or other units having a structure of such integrity as to resist moment loadings as occur in handling, storing and shipping of said units. This

device may be used for stacking any standardized rigid container which is used for housing and/or storing and shipping. The modular devices consist of a support column with sloping ram portion to guide the upper stored unit onto a support foot, a plurality of ear members on both sides of the columnar device and one brace member associated with each



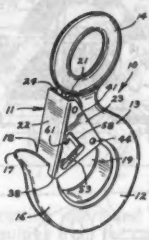
columnar device which may be switched to either side ear member of the columnar device to form either a right- or left-hand member. When two or more columnar devices are operated in conjunction with each other these braces are connected from the top of one columnar device to the bottom of the other columnar device to provide cross braces between the columnar devices.

3,575,457
MUSHROOM HOOK
Charles C. Wallace, Portland, Oreg., assignor to West Coast Wire Rope and Rigging of Portland, Inc.,, Portland, Oreg.
Filed Oct. 21, 1968, Ser. No. 769,315
Int. Cl. B66c *1/12*
U.S. Cl. 294—74 **4 Claims**



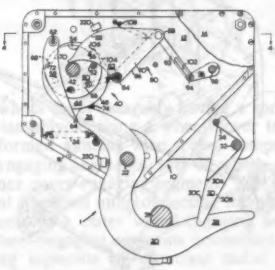
A mushroom-shaped hook having a stem to which the free end of a line may be secured and a disc-shaped cap joined to the stem and projecting radially outwardly from and substantially encompassing the stem. The cap is adapted to hook onto material upon which the hook rests to inhibit movement of the hook and the free end of the line on tensing the line. A line-receiving passage extends axially through the stem and a slot along the side of the stem connects with the passage to allow a line to be slipped laterally into the passage. A shoulder is provided within the passage against which a ferrule on the end of such a line may bear to secure the line within the passage.

3,575,458
HOOK AND LATCH WITH LOCK
Edward J. Crook, Jr., Fort Wayne, and Franklin P. Becker, Decatur, Ind., assignors to American Hoist & Derrick Company, St. Paul, Minn.
Filed Feb. 27, 1969, Ser. No. 802,787
Int. Cl. B66c *1/36*
U.S. Cl. 294—82 **14 Claims**



A latch connected to a crane hook to prevent accidental disengagement of the load from the hook. The latch pivotally mounted on the hook shank has side portions which straddle the tip of the hook and the shank of the hook when the latch is in the closed position. A locking member pivotally mounted on the latch is operative to prevent movement of the latch to the open position.

3,575,459
CARGO HOOK ASSEMBLY
Jack Coblenz, Vancouver, B.C., Canada, assignor to Okanagan Helicopters Ltd., Vancouver, B.C., Canada
Filed June 17, 1968, Ser. No. 737,783
Claims priority, application Canada, Aug. 24, 1967, 998,609
Int. Cl. B64d *17/38*; B66c *1/34*
U.S. Cl. 294—83 **10 Claims**

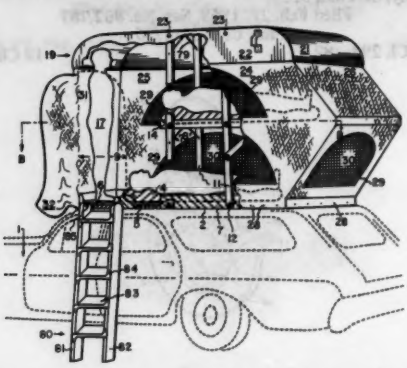


An automatically releasing cargo hook having an eccentrically mounted locking mechanism which must be rotated intentionally a predetermined amount before the load may drop. Two overcenter lines of action cause positive locking. A modification of the basic hook provides an automatic pickup capability, with pairs of hook elements, locking and release mechanism being symmetrically disposed on opposite sides of the axis of the cargo hook.

3,575,460
FOLDABLE SLEEPING ACCOMMODATIONS FOR ATTACHMENT TO A ROAD VEHICLE
Wesley W. Kennedy, 10014 S.E. 8th St., Bellevue, Wash.
Filed Apr. 7, 1969, Ser. No. 815,266
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 **9 Claims**

A portable sleeping mechanism, primarily for use atop a road vehicle, comprised of two sleeping decks, each on different levels and permanently interconnected by movable struts, which constitute the support-actuating means that collapses the unit and moves the upper deck down to a con-

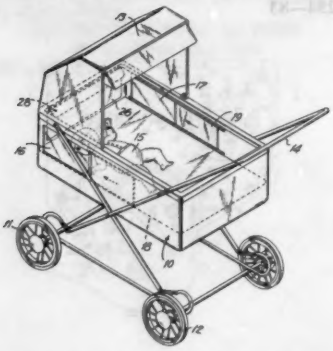
tiguous compaction on the lower deck for storage and transport; and also, expands the unit by orienting the decks on horizontal and parallel planes, one above the other transversalwise but offset longitudinalwise to provide sleeping space on both decks and adult standup dressing space at one end of the unit extending upward from the lower sleeping deck.



3,575,461
BABY CARRIAGE

Gerald M. Goldman, 185 Bronx River Road, Westchester County, N.Y., and Sherman Smith, Nassau County, N.Y.

Filed Sept. 5, 1968, Ser. No. 757,584
Int. Cl. B62b *9/10*
U.S. Cl. 296—28 2 Claims



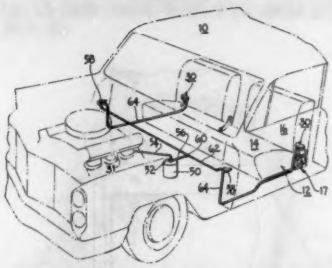
This invention relates to a baby carriage which provides a stimulating environment that allows an infant to increase its intellectual development. Transparent materials are inserted in strategic parts of the baby carriage to allow the infant to look through. This new concept in baby carriages provides the infant with the opportunity of using its visual powers more effectively by making available more for the infant to see.

3,575,462
LATCH RELEASE SYSTEM

William C. Riester, Williamsville, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.

Original application Aug. 24, 1967, Ser. No. 662,934, now Patent No. 3,516,704. Divided and this application Aug. 15, 1969, Ser. No. 870,980
Int. Cl. B60r *21/00*
U.S. Cl. 296—65 5 Claims

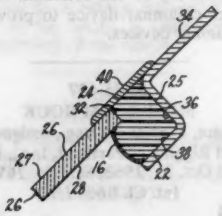
A motor vehicle having a seat back pivotal relative to the seat with a latch for preventing relative pivotal movement between the seat and seat back. A remote controlled latch actuator system includes a fluid pressure differential energized servo unit supplied by a bellows type pump or vacuum from the intake manifold through a remotely disposed valve assembly, either solenoid operated or mechanically operated, in response to opening or closing of a vehicle door for supplying fluid pressure to the servo unit. A single door switch operates a courtesy light and the solenoid valve. A diode separates the manual courtesy light switch form the door switch circuit.



3,575,463
WINDSCREEN BONDING STRIPS

George Kolevas, 24 Lindsay St., Mac Leod, Victoria, Australia

Filed Apr. 11, 1968, Ser. No. 720,581
Claims priority, application Australia, May 3, 1967, 21186
Int. Cl. B60j *1/00*
U.S. Cl. 296—93 3 Claims

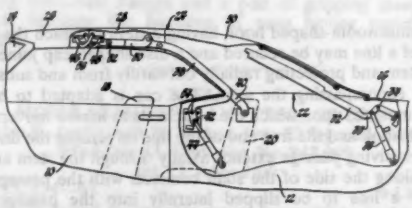


A bonding strip for a vehicle windscreen constituting an elongated body of butyl rubber substantially constant in cross section and having a fabric overlay adhered to part of the surface and extending throughout the effective length of the elongated body.

3,575,464
FOLDING RETRACTABLE HARD TOP

John Himka, Farmington, and Ronald A. Niewolak, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 29, 1969, Ser. No. 861,707
Int. Cl. B60j *7/12*
U.S. Cl. 296—117 6 Claims



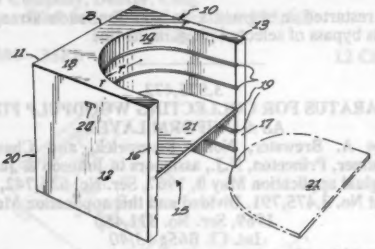
An automobile body having a three-section, hard top roof is disclosed. The front two sections are movable to a stored

position in the rear shelf area of the passenger compartment providing an open sun roof.

3,575,465
MODULAR CONSTRUCTION

John Dolby (0), and James Adler, Evanston, Ill., assignors to Evolutions IV Corporation, Chicago, Ill.

Filed June 25, 1969, Ser. No. 836,304
Int. Cl. A41c *13/00*
U.S. Cl. 297—118 **5 Claims**

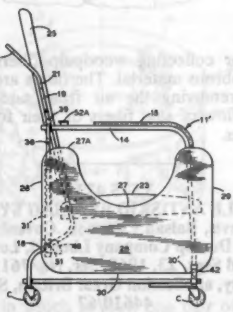


A modular construction adaptable for a multitude of furniture purposes consisting of a generally cubed-shaped structure having a first planar surface and two parallel planar surfaces extending at 90° from the first planar surface and a recessed surface located between said parallel planar surfaces and said recessed surface having means for receiving an holding rigid planar elements.

3,575,466
GERIATRIC CHAIR

Morton I. Thomas, Monroe; Donald W. Edwards, New York, N.Y., and John Hatala, Clifton, N.J., assignors to Femco Products, Inc., Edco Surgical Supply Company, a fraction part interest to each

Filed Oct. 31, 1968, Ser. No. 772,148
Int. Cl. A47c *7/02*
U.S. Cl. 297—155 **9 Claims**



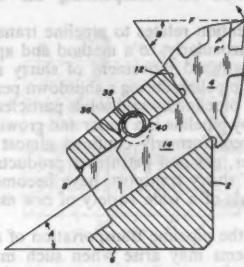
A chair construction particularly adapted for use by invalids or elderly people and including a table member which is movable between a storage position and a position for normal use; the chair having features of construction which increase the efficiency thereof while markedly reducing possibilities of injury to the occupant of the chair.

3,575,467
CUTTER BIT AND BLOCK

Charles S. Davis, Benton, Ill., assignor to Carmet Company, Pittsburgh, Pa.

Filed Mar. 11, 1969, Ser. No. 806,171
Int. Cl. E21c *35/18*
U.S. Cl. 299—92 **5 Claims**

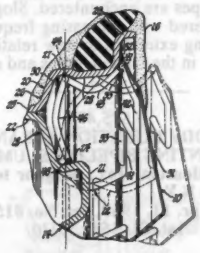
Cutting apparatus for use in underground mining industry including a cutting tool holder and a cutting tool containing a carbide cutting insert where the cutting tool includes a head portion and a shank portion disposed substantially perpendicularly to the head portion, the cutting tool shank being received in a bore in the cutting tool holder disposed at an acute angle to the cutting insert and in which cutting apparatus the forces resulting from the cutting action are communicated substantially axially to the cutting tool holder.



3,575,468
VEHICLE WHEEL COVER

Harley L. Kapanka, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1969, Ser. No. 847,840
Int. Cl. B60b *7/06*
U.S. Cl. 301—37 **3 Claims**

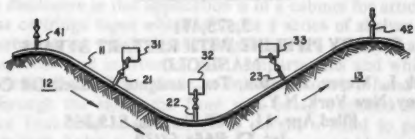


A vehicle wheel cover assembly having a spring retention device for releasably securing a wheel cover to a wheel by means of a formed annular wire spring comprising sets of outer cover-engaging segments, sets of which are interconnected by inner cover-engaging segments with a plurality of reentrant axial segments interconnecting the outer cover-engaging segments with outer wheel-engaging segments and, with inner wheel-engaging segments connected to the outer wheel-engaging segments by reentrant radial segments all formed integrally as part of the wire spring.

3,575,469
GAS INJECTION ARRANGEMENT FOR PREVENTING PIPELINE SLUMPING

Frank L. Meyer, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Apr. 11, 1969, Ser. No. 815,369
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 **6 Claims**



Method and apparatus for preventing downhill slumping in a shutdown slurry pipeline. Upon shutdown of the pipeline, a gas is injected into the line at selected locations to fluidize

the solids, thereby preventing the formation of solid particle plugs in the low regions of the line. If insufficient gas is injected to fluidize the settling solids, a channel will be formed in the upper portion of the pipe which will enable flow and pressure transmission for resuspending the solids upon restart.

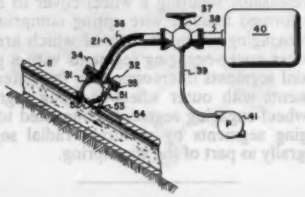
The present invention relates to pipeline transport operations; and more particularly, to a method and apparatus for preventing the downward movement of slurry solids in an inclined portion of pipeline during a shutdown period and for the plugging of the pipeline by said solids particles.

Transportation by pipeline is a major and growing industry. With the use thereof formerly confined almost entirely to movement of water, gas and petroleum products, pipelines, with the advent of slurry transport, have become useful for long and short hauls of a wide variety of raw materials and finished products.

With respect to the pipeline transportation of materials in slurry form, problems may arise when such materials are moved through pipelines inclined to go over a hill or down into a valley of such inclination to cause slumping. At these locations, during a planned or emergency line shutdown, the solids of the transported slurry may settle out vertically and subsequently slump down the inclined portions of the pipeline, thereby causing a compacted plug which may be very difficult to dislodge and move when line shutdown is terminated and transport activities are attempted.

These difficulties are most commonly avoided by laying solids-carrying or slurry pipelines so that they do not exceed a slope or angle of inclination below which slumping does not occur. Alternatively, the inclined pipeline sections are emptied or flushed of solids at each shutdown. Obviously, these alternative prior art approaches are not always feasible or economical, especially in those situations where long and relatively steep slopes are encountered. Slopes of this nature are being encountered with increasing frequency as pipeline operations are being extended to new relatively inaccessible mountainous areas in the United States and elsewhere.

3,575,470
IMPERVIOUS BODY INJECTION ARRANGEMENT FOR PREVENTING PIPELINE SLUMPING
Frank L. Meyer, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Apr. 11, 1969, Ser. No. 815,368
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 **7 Claims**



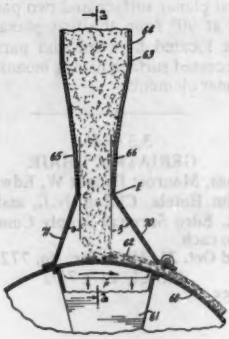
Method and apparatus for limiting downhill slumping in a shutdown slurry pipeline. Devices are placed along the sloping portions of the pipe whereby impervious bodies are injected into the pipeline through conduits when flow conditions dictate. The impervious bodies limit downward movement of the slurry solid phase when the principal driving force is gravity.

3,575,471
SLURRY PIPELINE WITH RESTART BYPASS MANIFOLD
Frank L. Meyer, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Apr. 11, 1969, Ser. No. 815,365
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 **7 Claims**

Method and apparatus for minimizing restart pressure of a shutdown slurry pipeline. A bypass manifold arrangement is provided in selected portions of a pipeline to enable plugs in the line formed by slumping of the slurry material solid phase

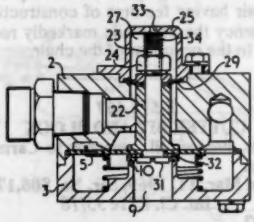
to be restarted in segments. In addition, such arrangement permits bypass of selected plugs in the line.

3,575,472
APPARATUS FOR COLLECTING WOODPULP FIBERS AS A UNIFORM LAYER
Charles A. Brewster, North Brunswick, and Charles H. Plummer, Princeton, N.J., assignors to Johnson & Johnson
Original application May 8, 1967, Ser. No. 636,742, now Patent No. 3,475,791. Divided and this application Mar. 28, 1969, Ser. No. 811,480
Int. Cl. B65g *53/40*
U.S. Cl. 302—59 **3 Claims**



Apparatus for collecting woodpulp fibers as a uniform layer of loose fibrous material. The fibers are collected on a surface while removing the air from said fibers without disrupting the flow of said fibers or their formation on the collecting means.

3,575,473
VEHICLE ANTISKID BRAKING SYSTEMS
John Walter Davis, Balsall Common, Coventry, England, assignor to The Dunlop Company Limited, London, England
Filed Sept. 23, 1968, Ser. No. 761,681
Claims priority, application Great Britain, Sept. 30, 1967, 44610/67
Int. Cl. B60t *8/00, 15/00*
U.S. Cl. 303—21 **12 Claims**



A valve having an annular inlet valve seat and an annular exhaust valve seat arranged concentrically and a flap valve

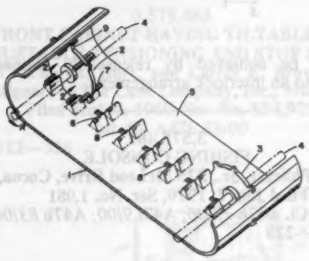
diaphragm which is engageable at its outer peripheral portion with the inlet seat and at its central portion with the exhaust seat and which can flex to uncover either the inlet seat or the exhaust seat, a stem being secured to the flap valve diaphragm and to a second diaphragm and being arranged to balance the pressures acting on the flap valve diaphragm, of which the following is a specification.

3,575,474

POSITIVE DRIVE SYSTEM FOR AN ENDLESS TRACK

Paul E. Russ, Sr., Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed June 3, 1968, Ser. No. 733,865
Int. Cl. B62d *55/12*
U.S. Cl. 305—35EB **12 Claims**



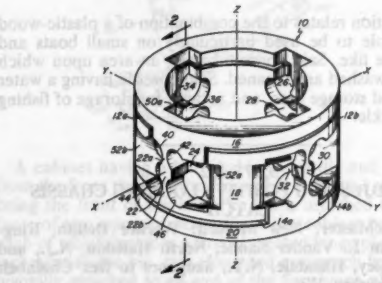
A lug and sprocket, positive drive system for a flexible and endless track. An antifouling drive and idler wheel for a positive drive system for use in mud, snow or the like.

3,575,475

FLEXURE JOINT

Donald R. Boerner, Wayne, N.J., assignor to Singer-General Precision, Inc., Little Falls, N.J.

Filed June 3, 1969, Ser. No. 829,958
Int. Cl. F16c *11/12*
U.S. Cl. 308—2 **4 Claims**



A flexure joint in which at least one pair of slots extend through the wall of a unitary hollow cylindrical member, the ends of one slot of each pair terminating a predetermined circumferential distance from the corresponding ends of the other slot of the same pair to form at least two flexure portions between the corresponding ends. Each flexure portion is formed by two flexure leaves, the longitudinal axes of which extend at an angle to each other.

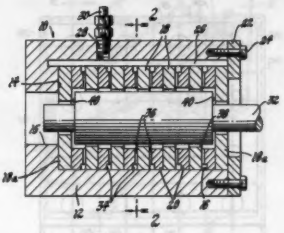
3,575,476

GAS BEARING

Frederick W. Ortman, Milan, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 14, 1968, Ser. No. 767,309
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **5 Claims**

An externally pressurized gas bearing in which the stationary bearing surface is made up of a plurality of stacked washers. A set of alternate relatively soft washers have one face grooved to provide manifolding and radial supply passages from the supply plenum to the hydrostatic gas bearing layer. The washers in the other alternate set are plain, of



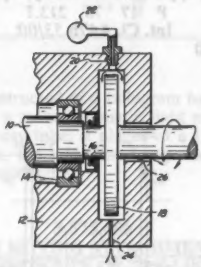
a relatively harder material and have smaller internal diameters to provide a plain bearing surface should the external pressure gas source suddenly fail. The design facilitates a family of fixed diameter bearings in which the length is tailored to meet the needs of various load carrying capacities.

3,575,477

SEAL

Edward M. Newsome, 25700 D'Hondt Court, Anchorville, Mich. 48043

Filed Oct. 23, 1969, Ser. No. 868,714
Int. Cl. F16j *15/40*
U.S. Cl. 308—36.3 **2 Claims**



A large slinger disc is provided on a rotating shaft between a bearing and the point where the shaft emerges from the housing. A pressurized mist of oil is supplied to a chamber around the disc, and this oil flow is divided by the disc, the inner branch maintaining a wiper seal moist, and the outer branch continuously flowing out of the housing through a clearance gap surrounding the shaft.

3,575,478

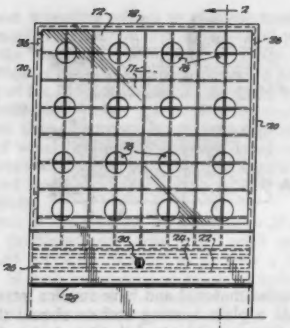
THEFTPROOF DISPLAY CABINET

Frank E. Szobski, 4808 Transit Road, Buffalo, N.Y., and Leonard Silver, 1790 Main St., Buffalo, N.Y.

Filed July 18, 1969, Ser. No. 842,952
Int. Cl. A47f *3/00*
U.S. Cl. 312—117 **11 Claims**

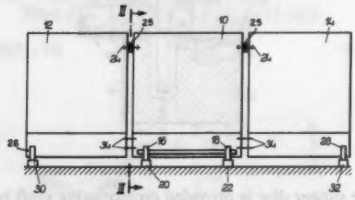
The disclosure in this application is of a cabinet for articles such as cartridge tapes which includes a series of shelves or compartments on which the cartridge tapes are displayed and a transparent wall in front of said compartments and which has holes therein of a size to permit a customer's hand to pass through the same, the front wall being disposed at a distance from said compartment to permit a hand to pass through such holes and grasp and inspect a cartridge tape, the holes being too small to permit a cartridge tape to be passed through the same, and the purchaser, after examining

the cartridge tape may replace the same on a shelf, or if he wishes to purchase it, to drop it to the bottom of the display



rack from where it may be removed by a sales person without removing said transparent front wall.

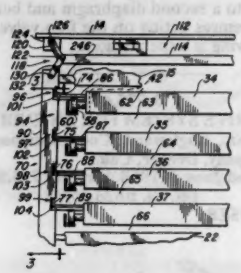
3,575,479
MOVABLE STORAGE-UNIT ASSEMBLIES
Rudi Kombuchen, Dusseldorf, Germany, assignor to Acrow (Automation) Limited, London, England
Filed Mar. 25, 1969, Ser. No. 810,308
Claims priority, application Germany, Apr. 6, 1968, P 17 78 213.7
Int. Cl. A47b *53/00*
U.S. Cl. 312—200 **6 Claims**



A movable storage unit assembly comprising a base storage unit having a pair of runners adapted to ride on a pair of parallel rails and first and second auxiliary storage units, each of the auxiliary storage units having one side attached to and supported by the base storage unit and the other side of each auxiliary storage unit having a runner adapted to ride on one of a second pair of parallel rails.

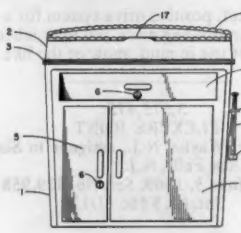
3,575,480
INTERLOCKING ARRANGEMENT
Ernest W. Peisker, Chicago, Ill. assignor to Walter E. Haller & Company, Chicago, Ill.
Filed Sept. 12, 1968, Ser. No. 759,462
Int. Cl. E05b *65/46*
U.S. Cl. 312—218 **12 Claims**

In a cabinet containing a plurality of drawers, apparatus for allowing only one drawer to be opened at a time is provided by a cam plate located adjacent the drawers and adapted to engage cam members located on the drawers. Interlocking the drawers and preventing access to the space therebetween is achieved by providing slide members that may be selectively moved to lockingly bridge two adjacent drawers. In addition, automatic release of members connected to a latching bar for purposes of loading trays in a



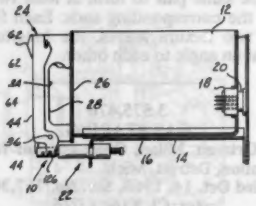
drawer can be achieved by releaseably connecting the latching bar to an interlock arrangement.

3,575,481
FISHING CONSOLE
Graydon A. Phlieger, Jr., 325 McLeod Drive, Cocoa, Fla.
Filed Jan. 7, 1970, Ser. No. 1,081
Int. Cl. A47b *77/06;* **A47f** *9/00;* **A47b** *83/00*
U.S. Cl. 312—228 **3 Claims**



This invention relates to the combination of a plastic-wood fishing console to be used particularly on small boats and yachts or the like. Said console having an area upon which fish may be washed and cleaned. Said console having a water supply, a cold storage area, and an area for storage of fishing tools and tackle.

3,575,482
SELF-ADJUSTING POSITIVE LOCKING CHASSIS LATCH
Edward MacMaster, New Milford; Werner Dellith, Ringwood; John L. Vander Sande, North Haledon, N.J., and Paul R. Gley, Hillsdale, N.Y., assignors to Rex Chainbelt Inc., Milwaukee, Wis.
Filed June 5, 1969, Ser. No. 830,678
Int. Cl. A47b *95/02*
U.S. Cl. 312—320 **19 Claims**



A self-adjusting positive locking chassis latch for securely retaining a chassis in housed position in a rack in which a handle assembly on the chassis comprises a primary lever

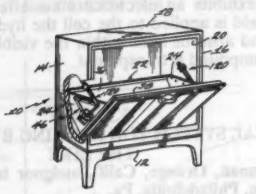
pivotally supported for movement from a release position to a home position in the course of which movement a hook on the primary lever engages a spring-loaded keeper pin to move the chassis home with a controlled locking force and to displace the keeper pin sufficiently relative to the keeper housing to accommodate any interference between the chassis and the rack. A secondary lever is adapted to be moved from a release position to a locking position to move a locking element to a position at which it positively locks interengageable elements, carried respectively by the keeper pin and the keeper housing, in engaged position. A releasable catch arrangement adapted to hold the primary and secondary levers in their home and locking positions prevents the secondary lever from being latched unless the primary lever is already in its home position.

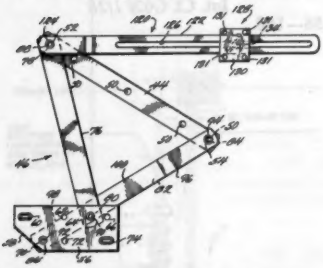
3,575,483

DROP FRONT CABINET HAVING TILTABLE BIN WITH ADJUSTABLE TENSIONING AND STOP DEVICE

Warren C. Church, Hurt, and Calvin E. Brown, Altavista, Va., assignors to The Lane Company, Inc., Altavista, Va.

Filed Sept. 3, 1969, Ser. No. 854,929
Int. Cl. A47b *88/00*
U.S. Cl. 312—328 **3 Claims**





A cabinet having a bin tiltable forwardly and downwardly from the front thereof, the front of at least part of the cabinet being the front of the bin. The bin is attached to the inside faces of two opposed sidewalls of the cabinet by two hinges each of which includes a first elongated hinge plate for preattachment to the bin, two elongated arms each having on end pivotally attached to an end of the first hinge plate, the two elongated arms crossing, scissor fashion intermediate their length and being pivotally secured at spaced points to a second hinge plate having at least two elongated holes therethrough and at least an additional circular hole therethrough for securement of the hinge to the cabinet which allows adjustment of the bin with respect to the cabinet during installation. The hinge assemblies further include devices for offering a desired resistance to tilting the bin, in order to prevent unexpectedly rapid tilting thereof and for limiting tilting of the bin.

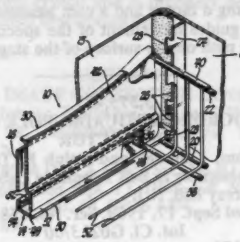
3,575,484

CONVERTIBLE CANTILEVERED SHELF

Keith K. Kesling, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 12, 1969, Ser. No. 823,648
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 **1 Claim**

In preferred form, a convertible sliding shelf for a domestic refrigerator which is normally supported for sliding movement on a frame hung upon notched vertical brackets affixed to a rear wall of the refrigerator. The shelf lifts out of the



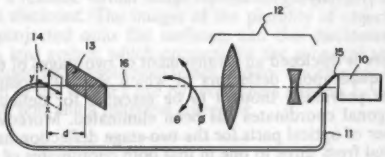
frame and may be separately hung from the same brackets as the frame.

3,575,485

HOLOGRAPHIC MAGNIFIER

Lyman F. Van Buskirk, Ridgecrest, Calif., assignor to the United States of America as represented by the Secretary of the Navy

Filed Jan. 2, 1969, Ser. No. 789,094
Int. Cl. G02b *27/00*; G02b *5/18*
U.S. Cl. 350—3.5 **2 Claims**



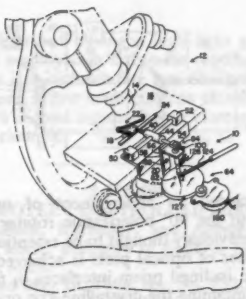
A magnifier constructed of a hologram having the characteristic that when a monochromatic light source, such as a television cathode-ray tube, is placed at a specified distance from the hologram, the television image as viewed through the hologram is magnified.

3,575,486

SPECIMEN MOVING ATTACHMENT FOR A MICROSCOPE OR THE LIKE

Victor M. de Posada, deceased, late of San Salvador, and Mary G. de Posada, Executrix, Calle Roma 192, Colonia Roma, San Salvador, El Salavadora, Centro America

Filed Aug. 25, 1969, Ser. No. 852,996
Int. Cl. G02b *7/02*
U.S. Cl. 350—90 **14 Claims**



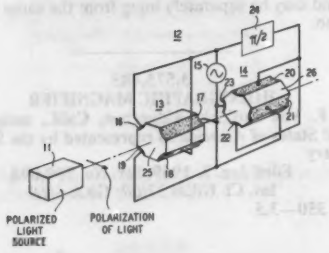
An attachment readily mountable on the stage of conventional microscopes and having a specimen holder or press

and an actuator assembly connected to the holder for moving the holder manually in any desired direction on the flat support surface of the stage or automatically by a drive assembly, including a motor and a cam assembly having a cam surface which guides movement of the specimen holder in a predetermined path on the surface of the stage.

3,575,487
TWO-COORDINATE QUADRUPOLE OPTICAL DEFLECTOR

Edward A. Ohm, Holmdel, and Ralph F. Trambarulo, Red Bank, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 17, 1969, Ser. No. 858,705
Int. Cl. G02f *3/00*
U.S. Cl. 350—150 **3 Claims**

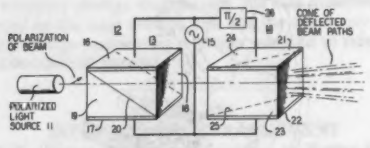


There is disclosed an arrangement of two stages of electro-optic quadrupole deflectors in which the 90° polarization rotator previously thought to be essential for deflection in orthogonal coordinates has been eliminated. Moreover, the number of optical parts for the two-stage deflection has been reduced from three to one in that both coordinates of deflection can be obtained in successive portions of one continuous electro-optic crystal. This deflector is useful for circular scan deflection and for multiple-pass light deflection, both of which are useful in optical time-division multiplex communication systems. The successive sets of quadrupole electrodes are symmetrically shaped with respect to the axis and are displaced 45° relative to one another about the propagation axis.

3,575,488
SIMPLIFIED TWO-COORDINATE ELECTRO-OPTIC PRISM DEFLECTOR

Edward A. Ohm, Holmdel, and Ralph F. Trambarulo, Red Bank, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 17, 1969, Ser. No. 858,708
Int. Cl. G02f *3/00*
U.S. Cl. 350—150 **3 Claims**

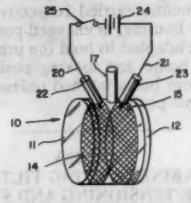


There is disclosed an arrangement of two-coordinate deflectors without the 90° polarization rotator between the stages that was previously thought to be essential. This reduction in the number of optical parts is achieved by mutually rotating only the inclined prism interfaces in the successive stages, while maintaining the crystalline axis orientations and electrode orientations the same in the two stages. The new deflector is easier to align and scatters less light than prior prism deflectors; and it will be useful in multiple-pass light deflectors and optical time-division multiplex communication systems.

3,575,489
LIQUID CELL OPTICAL SHUTTER

John R. Novak, Canoga Park, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Apr. 8, 1968, Ser. No. 719,422
Int. Cl. G02f *1/12*
U.S. Cl. 350—160 **1 Claim**

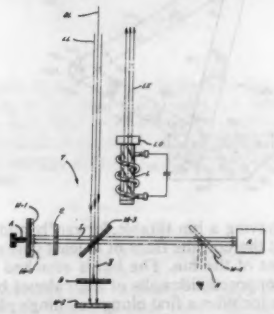


An optical shutter consisting of an aromatic hydrocarbon in liquid form together with a solvent and an electrolyte disposed in a cell having a pair of electrodes. The aromatic hydrocarbon may, for example, be a polynuclear hydrocarbon and exhibits an electrochromic effect. Thus when an electric field is applied to the cell the hydrocarbon becomes ionized and absorbs light within the visible region while the neutral compound is transparent.

3,575,490
OPTICAL SYSTEM FOR RANGING BY LASERS AND THE LIKE

Elias Reisman, Orange, Calif., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Apr. 8, 1968, Ser. No. 719,618
Int. Cl. G02f *1/28*
U.S. Cl. 356—160 **10 Claims**



A light splitting and recombining system, protecting observers and apparatus from destructive effects of laser flashes. Light from two paths is combined differentially to reduce, by interference, the light transmitted by the system. In one of the paths there is included a light-bleachable optical element whose transmissivity is a function of incident light energy. The system accepts low energy light of all wavelengths, but substantially stops high energy laser light.

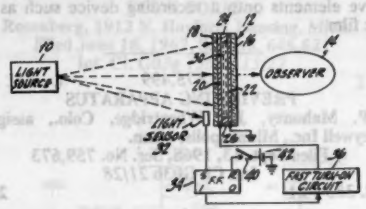
3,575,491
DECREASING RESPONSE TIME OF LIQUID CRYSTALS

George H. Heilmeier, Philadelphia, Pa., assignor to RCA Corporation

Filed Oct. 16, 1968, Ser. No. 768,145
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 **5 Claims**

The speed of response of a liquid crystal is increased without degrading the crystal, by applying the crystal an electric field which is of substantially greater value than the

minimum value of field required to achieve substantially maximum light scattering from the crystal and, after a short



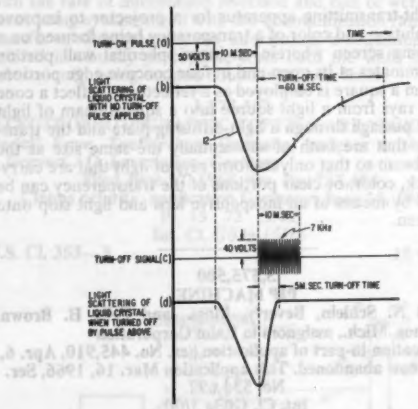
interval, reducing the magnitude of the applied field to a value close to said minimum value.

3,575,492

TURNOFF METHOD AND CIRCUIT FOR LIQUID CRYSTAL DISPLAY ELEMENT

Edward Oskar Nester, Hightstown, and Bernard Joseph Lechner, Princeton, N.J., assignors to RCA Corporation

Filed July 10, 1969, Ser. No. 840,731
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 **7 Claims**


TURN-ON PULSE (a)
50 VOLTS
10 M.SEC.
TIME
TURN-OFF TIME =60 M.SEC.
LIGHT SCATTERING OF LIQUID CRYSTAL WITH NO TURN-OFF PULSE APPLIED (b)
40 M.SEC.
7 kHz
40 VOLTS
TURN-OFF SIGNAL (c)
5M SEC. TURN-OFF TIME
LIGHT SCATTERING OF LIQUID CRYSTAL WHEN TURNED OFF BY PULSE ABOVE (d)

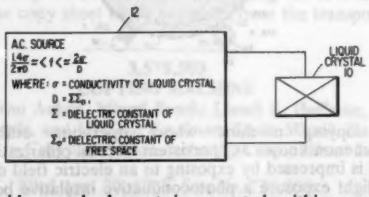
Nematic liquid crystal element of the type exhibiting dynamic scattering is erased by applying an alternating voltage to the element at a frequency in the range 2 to 20 kilohertz.

3,575,493

FAST SELF-QUENCHING OF DYNAMIC SCATTERING IN LIQUID CRYSTAL DEVICES

George Harry Heilmeier, Philadelphia, Pa., assignor to RCA Corporation

Filed Aug. 5, 1969, Ser. No. 847,659
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 **2 Claims**


12
A.C. SOURCE
WHERE: σ = CONDUCTIVITY OF LIQUID CRYSTAL
D = ΣΣ₀,
Σ = DIELECTRIC CONSTANT OF LIQUID CRYSTAL
Σ₀ = DIELECTRIC CONSTANT OF FREE SPACE
LIQUID CRYSTAL 10

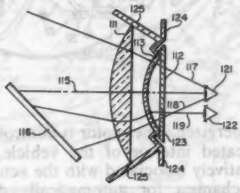
A liquid crystal element is operated within a critical frequency range such that upon removal of the exciting electric field, the dynamic scattering exhibited by the crystal decays within a matter of milliseconds—an interval which is substantially shorter than the usual natural decay time. The critical frequency range is related to the conductivity (which is temperature and voltage dependent) and dielectric constant of the liquid crystal and is precisely defined by equations in the detailed description below.

3,575,494

VIRTUAL IMAGE CORRECTION LENS SYSTEM

Thomas P. Neuberger, Baltimore, Md., and Walter E. Myles, Alexandria, Va., assignors to General Precision Inc., Binghamton, N.Y.

Original application Dec. 2, 1965, Ser. No. 511,149. Divided and this application Sept. 17, 1968, Ser. No. 810,859
Int. Cl. G02b *3/04*
U.S. Cl. 350—189 **2 Claims**



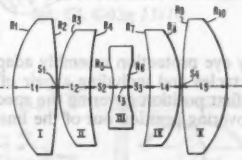
A visual system including a viewing window to present to a viewer a realistic virtual image representing a plurality of objects is disclosed. The images of the plurality of objects are often projected onto flat surfaces, and this disclosure sets forth a lens system which corrects for the spherical aberration caused by the spherical lenses and for the changes in the position of the viewer's eye by providing a window having an elliptical lens and a spherical corrector.

3,575,495

HIGH SPEED DOCUMENT LENS HAVING FIVE ELEMENTS

Raymond E. Tibbetts, Mahopac, and Janusz S. Wilczynski, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1969, Ser. No. 869,596
Int. Cl. G02b *9/60*
U.S. Cl. 350—219 **2 Claims**



A lens is described having a high light gathering ability which may be employed in document reading and/or sorting machines. The lens includes five lens elements, a first biconvex lens element, a first meniscus lens element, a biconcave lens element, a second meniscus lens element and a second biconvex lens element.

3,575,496

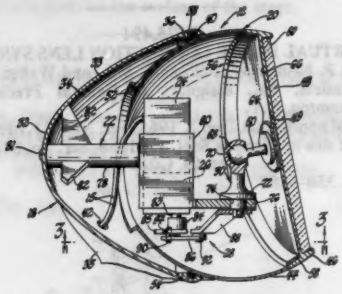
REMOTELY CONTROLLED MIRROR

Samuel C. Pollock, Rochester, and Arthur J. Carpenter, Royal Oak, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 28, 1968, Ser. No. 732,563
Int. Cl. G02b *1/08*
U.S. Cl. 350—289 **3 Claims**

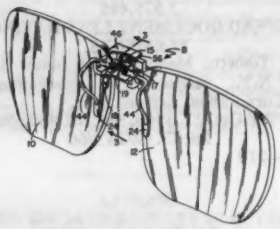
A remotely controlled rearview mirror for a motor vehicle characterized by having a mirror element that automatically scans a rearward field of vision. In a preferred form, the mir-

ror element is universally connected to a post member that is rotatable about a vertical axis. The post member is operatively connected to an electric motor and a drive mechanism that imparts a harmonic oscillation to the mirror element when



the motor is energized. The motor is controlled by an actuator switch located interior of the vehicle, and a control switch is operatively associated with the actuator switch and the drive mechanism for automatically deenergizing the motor a predetermined oscillatory period.

3,575,497
AUXILIARY EYE PROTECTION ASSEMBLY
Conrad L. Leblanc, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Aug. 11, 1969, Ser. No. 848,938
Int. Cl. G02c *7/10, 9/04*
U.S. Cl. 351—47 **4 Claims**

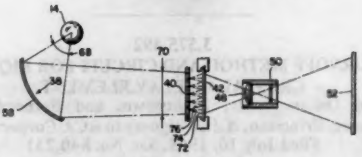


An auxiliary eye protection assembly adapted to clip onto a pair of spectacles and including a pair of lenses pivotally movable to a first position covering the spectacle lenses and a second uncovering position out of the line of vision of the wearer.

3,575,498
HIGH SPEED CAMERA
Jacob L. Bohn, Glenside, Pa., assignor to BNK Instrument Company, Philadelphia, Pa.
Filed Sept. 24, 1968, Ser. No. 761,924
Int. Cl. G03b *39/06*
U.S. Cl. 352—84 **18 Claims**

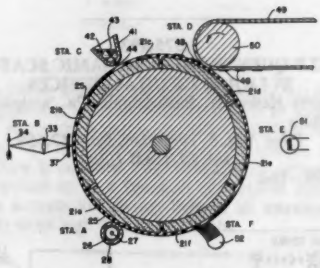
A camera is provided, wherein light from an object to be photographed is transmitted through a lens system, in a path of travel, the light then passing through a novel means for creating slight changes in direction of the path of light travel, whereby light may be reflected from any of a plurality of reflective elements onto a recording device such as photographic film.

3,575,499
PREVIEWING APPARATUS
John P. Mahoney, Jr., Wheatridge, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 13, 1968, Ser. No. 759,673
Int. Cl. G03b *21/28*
U.S. Cl. 353—21 **2 Claims**



A light-transmitting apparatus for a projector to improve the resolution and color of a transparency being focused on a previewing screen wherein an inner spherical wall portion that terminates at its open end in four concave edge portions that form a square is employed as a reflector to reflect a cone of light rays from a light source into a square beam of light rays for passage through a light-diffusing plate and the transparency that are both of substantially the same size as the square beam so that only uniform rays of light that are carrying black, color, or clear portions of the transparency can be focused by means of an inexpensive lens and light stop onto the screen.

3,575,500
PIP MACHINE
Herbert N. Schlein, Beverly, Mass., and Felix H. Brown, Okemos, Mich., assignors to Rahn Corporation
Continuation-in-part of application Ser. No. 445,910, Apr. 6, 1965, now abandoned. This application Mar. 16, 1966, Ser. No. 534,697
Int. Cl. G03g *5/00*
U.S. Cl. 355—3 **42 Claims**

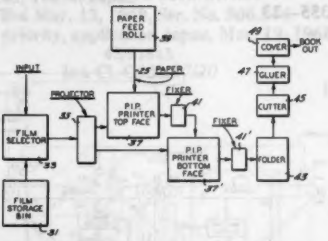


A copying machine whose operation utilizes the phenomenon known as "persistent internal polarization." An image is impressed by exposing to an electric field during or after light exposure a photoconductive insulative body constructed so as to be capable of recording a latent image by persistent internal polarization. Development may be done by toner, and the developed image may be transferred to paper, as in xerographic reproduction.

3,575,501
SYSTEM FOR HIGH SPEED RETRIEVAL OF INFORMATION AND CONVERSION THEREOF TO BOOK FORM

Nathan Rosenberg, 1912 N. Hayford, Lansing, Mich.

Filed June 16, 1967, Ser. No. 646,621
Int. Cl. G03g *15/00, 15/22*
U.S. Cl. 355—3 2 Claims

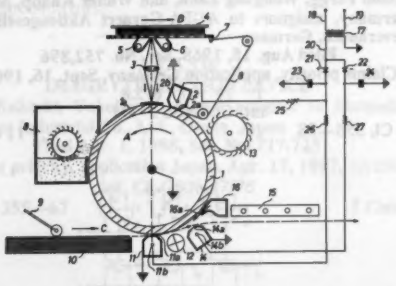


A high speed information retrieval and transfer system including an addressable information storage unit together with means for addressably selecting units of information from the storage unit. A movable image receiving web is provided for continuous, sequential recording of selected information units received from a high speed information transfer module with the rate of information selection and rate of web movement being synchronized with the communication rate of the transfer module whereby the information is sequentially imprinted in visually perceptible form onto the web, the web subsequently being cut and bound into book form.

3,575,502
ELECTROPHOTOGRAPHIC COPYING ARRANGEMENT

Rudolf Eppe, Taufkirchen, Germany, assignor to AGFA - Gevaert AG, Leverkusen, Germany

Filed June 17, 1968, Ser. No. 737,484
Claims priority, application Germany, June 15, 1968, P 15 72 330.5
Int. Cl. G03g *15/16*
U.S. Cl. 355—3 10 Claims



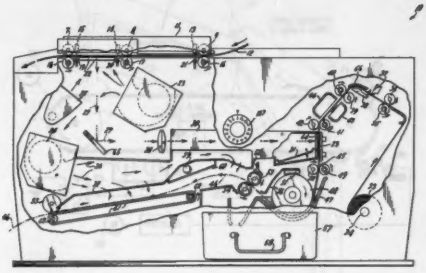
A first charging device is used for transferring a powder image from a transporting cylinder to a copy sheet by charging the copy sheet which causes an electrostatic force attracting the copy sheet to the transporting cylinder. A second charging device charges the copy sheet with a charge of opposite polarity for substantially neutralizing the first charge so that the copy sheet easily separates from the transporting cylinder.

3,575,503
COPYING MACHINE

John A. Van Auken, Miami Beach; Lionel B. Hoffman, Fort Lauderdale, and M. Gene Kaufman, South Miami, Fla., assignors to Copystatics Manufacturing Corp., Miami Lakes, Fla.

Filed Apr. 30, 1968, Ser. No. 725,390
Int. Cl. G03g *15/00*
U.S. Cl. 355—8 39 Claims

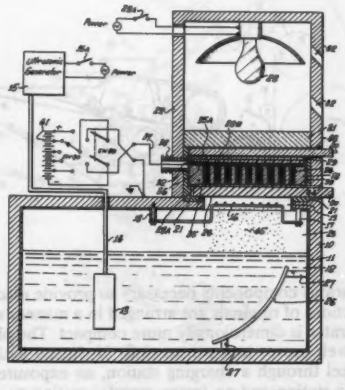
An electrostatic copying machine capable of very fast operation in a reciprocating multiple copy mode. The original document to be copied is transported through the machine past the scanning window. After a first copy has been made the document itself is shuttled back past the scanning window until the leading edge of the original is at the front end of the scanning window. At this time another forward movement and scan take place, and another copy is made. This process is repeated for as many times as the number of copies required. The overall operation is fast for two reasons. First, the reverse feed rate of the original is greater than the forward feed rate since during reverse feed there is no scanning. Second, the copy paper feed begins during the reverse travel of the original such that by the time the leading edge of the original reaches the front end of the scanning window, the leading edge of the copy paper reaches the front end of the exposure window and exposure can proceed without lost time. During forward feed the original is moved only until the trailing edge clears the scanning window. During reverse feed the original is moved only until the leading edge clears the scanning window. The use of a cam which can be clutched to the original drive system permits the copy feed to start at a time such that perfect registration is assured when the original forward feed begins, independent of the length of the original.



3,575,504
ELECTROSTATICALLY CONTROLLED MASKLESS VAPOR PLATING APPARATUS

William Hotine, Albion, Calif., assignor to General Dynamics Corporation

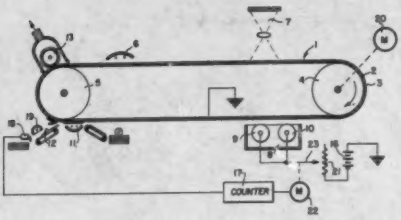
Filed May 10, 1966, Ser. No. 548,888
Int. Cl. G03g *15/10*
U.S. Cl. 355—10 4 Claims



An electrostatically controlled maskless vapor plating system for deposition of an electroless plating solution on an insulating substrate by means of a photoconductive matrix which is specifically fabricated to have the necessary proper-

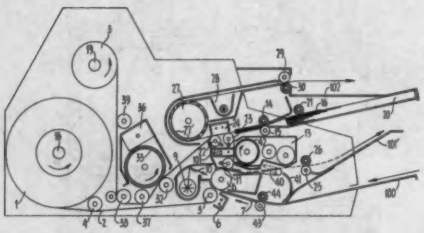
ties for the generation of an electrostatic analogy of a visible pattern.

3,575,505
AUTOMATIC BIAS CONTROL
Charles D. Parmigiani, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 30, 1968, Ser. No. 748,796
Int. Cl. G03g *13/08*
U.S. Cl. 355—10 7 Claims



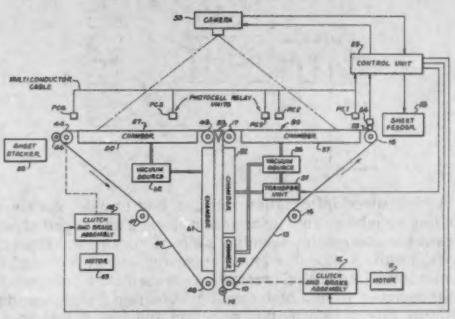
Gradual deterioration of performance of an electrophotosensitive member is compensated for in an electrophotographic machine by a device which gradually raises bias on a development electrode according to use of the electrophotosensitive member in the machine. Apparatus is disclosed for counting the number of cycles of operation of the electrophotographic machine and changing the bias applied to magnetic brush in the apparatus in response to a predetermined number of the machine.

3,575,506
COPYING APPARATUS
Wilhelm Knechtel, Rodheim-Bieber, Germany, assignor to The Singer Company
Filed Oct. 21, 1968, Ser. No. 769,151
Claims priority, application Germany, Nov. 24, 1967, P 15 97 834.4
Int. Cl. G03g *15/00*
U.S. Cl. 355—16 4 Claims



The various components necessary to provide electrostatic reproductions of originals are arranged in a manner such that the apparatus is dimensionally more compact. The photoconductive web moves in a substantially U-shaped path from a supply reel through a charging station, an exposure station, developer station and an image transfer station to a takeup reel. Similarly, the original sheets are moved in a U-shaped path and into contact with the photoconductive web while the copy sheets are fed individually in a similar U-shaped path coincident with the photoconductive web for transfer of the developed image.

3,575,507
AUTOMATIC CAMERA AND LOOSE SHEET TURNER USING VACUUM CONVEYOR BELTS
Robert J. Varson, Washington, D.C.; Philip O. Hackelton, Suitland, and Anthony A. Berlinsky, Silver Spring, Md., assignors to the United States of America as represented by the Secretary of Commerce
Filed May 9, 1969, Ser. No. 823,353
Int. Cl. G03b *27/32, 27/46*
U.S. Cl. 355—23 12 Claims



An arrangement is described for photographing both sides of loose sheets arranged in a stack. A sheet is carried on a vacuum belt to a first area where side A is photographed. The sheet is then turned and transferred to another vacuum belt which moves the sheet to a second area while a second sheet is moved to the first area. Side B of the first sheet and side A of the second sheet are then photographed. Included are means for detecting a double sheet fed to the first belt or a sheet not fed completely off the second belt.

3,575,508
EXPOSURE TIME CONTROL ARRANGEMENT
Berthold Fergg; Wolfgang Zahn, and Walter Knapp, Munich, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 15, 1968, Ser. No. 752,896
Claims priority, application Germany, Sept. 16, 1967, P 15 97 072.6
Int. Cl. G03b *27/04*
U.S. Cl. 355—88 11 Claims

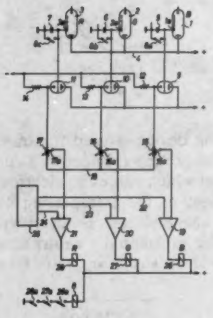
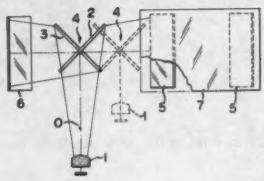


Photo sensitive material is illuminated through a color original. Three secondary electron multipliers furnish currents proportional to the light illuminating the photo sensitive material, one for each of three colors. Each current charges a capacitor. One terminal of each of the capacitors is connected to the corresponding secondary electron multiplier, and is also connected to a potentiometer. The other terminals of all three potentiometers are connected to a common point. The voltage at the wiper arm of each potentiome-

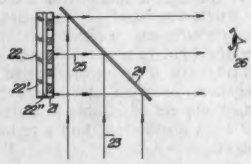
ter is compared to a corresponding reference voltage. Illumination in a given color is terminated when the voltage at the wiper arm and the corresponding reference voltage have a predetermined relationship.

3,575,509
SLIT EXPOSURE DEVICE
Shigeru Suzuki, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Mar. 13, 1969, Ser. No. 806,844
Claims priority, application Japan, Mar. 19, 1968, 43/81843
Int. Cl. G03b 27/70
U.S. Cl. 355—66 1 Claim



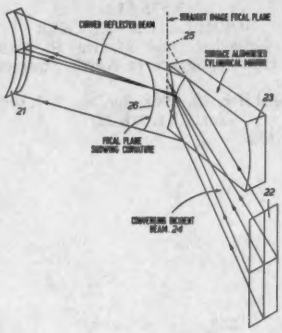
A slit exposure device comprising an original document holder and an exposure slit both of which are held stationary and a movable optical system for directing light from the original document through the exposure slit to a photosensitive recording surface which is moved in a plane parallel to the plane of the document holder. The optical system comprises a fixed reflecting mirror adjacent the exposure slit over which the photosensitive recording surface is moved in synchronism with a scanning mirror. Cross-shaped mirrors and a unitary lens-mirror move in synchronism with the scanning mirror but at a speed one-half that of the scanning mirror, the unitary lens-mirror moving both perpendicular to and in the same direction as that of the scanning mirror and cross-shaped mirrors.

3,575,510
IMAGE CORRECTION DEVICE
Tadao Kohashi, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 1, 1968, Ser. No. 717,725
Claims priority, application Japan, Apr. 17, 1967, 42/25031
Int. Cl. G03b 27/76
U.S. Cl. 355—67 5 Claims



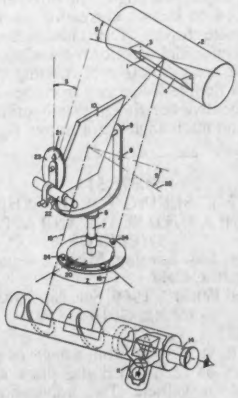
A device for correcting an image formed on a photographic film, having a layer of a radiation-sensitive luminescent material disposed opposite to the photographic film. The luminescent layer acts as a source of light having an intensity distribution corresponding to the relative light transmissivity of the image on the film and the light from the light source is projected on the film thereby correcting the contrast of the original image.

3,575,511
EBERT MONOCHROMATOR WITH IMPROVED SLIT ILLUMINATION USING A CYLINDRICAL MIRROR
Robert John Francis, Cambridge, England, assignor to Pye Limited, Cambridgeshire, England
Filed Jan. 10, 1969, Ser. No. 790,393
Claims priority, application Great Britain, Jan. 10, 1968, 1480
Int. Cl. G01j 3/12
U.S. Cl. 356—99 10 Claims



In a Czerny-Turner monochromator having a curved entrance slit for white light to pass to the mirror and thence the grating, a straight elongated light source is used with optical means, for example a convex lens and a cylindrical reflector, forming at the entrance slit, an image of the light source which is substantially congruent with the curved entrance slit.

3,575,512
OPTICAL APPARATUS FOR DETERMINING THE ORIENTATION OF AN OBJECT WITH RESPECT TO REFERENCE AXES
Jean Baboz, Saint-Mande Val De Marne, France, assignor to Societe D'Optique, Precision, Electronique Et. Mecanique Sopelem, Paris, France
Filed Oct. 15, 1969, Ser. No. 866,472
Claims priority, application France, Oct. 29, 1968, 171839
Int. Cl. G01b 11/27
U.S. Cl. 356—138 9 Claims



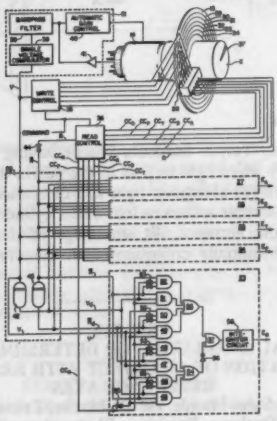
two present invention is concerned with apparatus for determining the orientation of an object relative to a system of reference axes, said system comprising tow plane reflecting surfaces which are disposed at 90° to each other, are fixed relative to the object and are arranged to receive an

image from a further plane reflecting surface which is pivotally mounted on a theodolite, a collimator whose optical axis is directed towards said further reflecting surface, a telescope whose optical axis is parallel to that of the collimator and which will receive the image of the collimator reticule after reflection at the three said reflecting surfaces when said further reflecting surface is in a plane perpendicular to the line of intersection of the planes containing said two reflecting surfaces, and means for determining the position of said further reflecting surface on the theodolite.

3,575,513
CORRELATOR TRACKER

Raymond E. Gallagher, and Marvin H. Hammond, Jr., Columbus, Ohio, assignors to North American Rockwell Corporation

Filed Dec. 18, 1968, Ser. No. 797,305
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 **21 Claims**



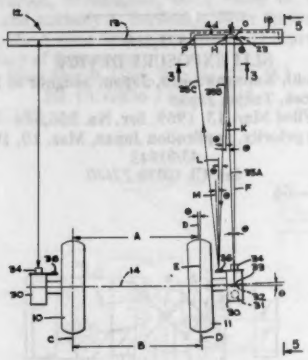
Apparatus and signal-processing methods are provided in a rotating slit-type correlator tracker to derive azimuth angle and depression angle error output signals that are normally in addition to roll angle, yaw angle, and pitch angle error output signals developed in known correlator tracker equipments; disclosed alternate forms of mechanization utilize square waveform and sinusoidal waveform correlation multiplicative coefficients that are a function of rotating slit scan position and that have a double frequency in comparison to the correlation multiplicative coefficient ideally utilized for developing yaw angle and pitch angle error output signals.

3,575,514
METHOD OF MEASURING TOE OF VEHICLE WHEELS WITH ENLARGED SCALE AND APPARATUS THEREFOR

James W. Baker, East Lansing, Mich., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 17, 1969, Ser. No. 799,819
Int. Cl. G01b *11/26*
U.S. Cl. 356—155 **10 Claims**

In measuring the toe of the front wheels of a vehicle, a projector is mounted on each wheel and aimed at a background unit in front of the vehicle. Two adjustable scales on the background unit are set so that a reference image projected from each projector hits the zero line of the scale for that wheel when the wheel is normal to the background unit. To determine the toe, the wheels are turned until one of the wheels is normal to the panel. The reference image is projected from the projector on the other wheel to a mirror on the background unit, and is reflected back to a mirror on the projector, from which it is reflected back to the adjustable scale for that wheel on the background unit. The reading on

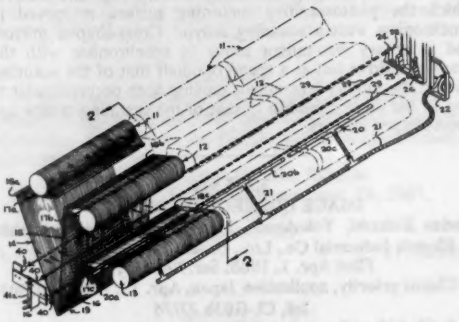


the scale, which is enlarged, gives the total toe of the vehicle wheels.

3,575,515
BEAM OF YARN SHEET MONITORING APPARATUS

Raymond Baines Fertig, Ronceverte, W. Va., assignor to Appalachian Electronic Instruments, Inc., Ronceverte, W. Va.

Filed June 25, 1969, Ser. No. 836,311
Int. Cl. G01n *21/18, 21/30, 21/16*
U.S. Cl. 356—199 **10 Claims**



An optical system for yarn inspecting apparatus to detect broken yarns in a yarn sheet, wherein an air-pressurized tube spans the yarn sheet and blows air in a direction to blow any broken yarn ends through a monitoring axis. The optical system includes a detector head adjacent one edge of the sheet having a light source and a phototransistor and a lens system for projecting light in a narrow cross section beam along the monitoring axis to a retroreflective target at the other edge of the sheet. A target lens covers the target, and the lens and lens system are adjustable to cause the beam to provide a spot of light on the lens and a reduced size light pattern on the target.

3,575,516
MECHANICAL PENCIL

Yukio Horie, Tokyo, Japan, assignor to Dai Nihon Bungu Kabushiki Kaisha, Tokyo, Japan, also trading as The Japan Stationery Co., Ltd.

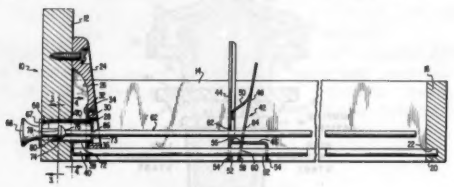
Filed Feb. 10, 1969, Ser. No. 797,821
Claims priority, application Japan, Feb. 14, 1968, 43/10165
Int. Cl. B43k *21/18*
U.S. Cl. 401—83 **3 Claims**

A mechanical pencil includes an outer casing and an inner casing. The inner casing comprises a lower plane on the same

level has a lead protruding passage and teeth-shaped continuous notches opposed to the lower plane and forming a space between them. An S-shaped plate spring is engaged at its rear end in the notches and holds a lead at its front end portion.

The spring is moved back and forth by means of a block loosely secured to it. An ear of the block projects outside of the outer casing so that the block may be moved by the thumb of the hand holding the mechanical pencil.

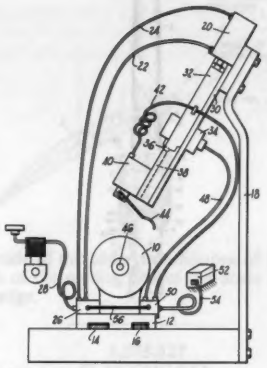
3,575,517
FILE CARD LOCKING MECHANISM
Robert S. Cartwright, Booneville, N.C., assignor to Stewart-Warner Corporation, Chicago, Ill.
Filed Oct. 21, 1968, Ser. No. 769,089
Int. Cl. B42f *13/14*
U.S. Cl. 402—61 **4 Claims**



The file card drawer employs a cylindrical bushing carried by a faceplate which receives a knob and holding rod assembly. The knob is undercut and engages a lip in the bushing for holding the assembly in place. A bearing plate at the inner end of the bushing has a hole whose center line is below the centerline of the bushing to form a fulcrum which applies a downward pressure on the rod to lock the knob assembly in place.

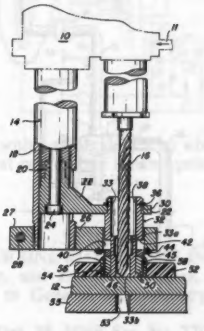
3,575,518
TOOL PROBE
Horst Waldmann, St. Joseph, Mich., assignor to The Bendix Corporation
Filed Dec. 23, 1968, Ser. No. 786,098
Int. Cl. B23b *49/00*
U.S. Cl. 408—6 **4 Claims**

A detector for sensing the condition of a tool member to control the operation of a machine. A probe member operated by a motor is connected to a first electrical relay. When the probe member contacts the tool member, a second relay is activated to close a switch controlling the operation of the machine. The operation of the machine is delayed



until the first relay has operated the motor to move the probe away from the tool member.

3,575,519
DRILL GUIDE ASSEMBLY
Russell L. Bruner, San Diego, and John B. Strohauer, La Mesa, Calif.
Filed June 2, 1969, Ser. No. 829,610
Int. Cl. B23b *49/02, 45/14*
U.S. Cl. 408—97 **4 Claims**

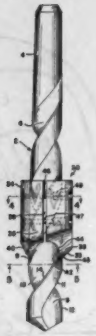


A drill collet or guide assembly for portable drill tools that rigidly locks the drill tool to a jig bushing in an aligned position to ensure accurate and rapid drilling of a plurality of aligned bores in a workpiece.

3,575,520
ROTARY CUTTING TOOL AND AUXILIARY TOOL ELEMENT AND MEANS FOR INTERCONNECTING SAME
William Halpern, Harrison, N.Y.
Filed Apr. 15, 1969, Ser. No. 816,204
Int. Cl. B23b *51/08*
U.S. Cl. 408—191 **9 Claims**

A tool is disclosed for drilling a hole, and as an adjunct thereto for performing an additional function such as chamfering or deburring. The tool is formed by a standard drill or reamer and an auxiliary tool element which may be adjusted to act when the drill or reamer has reached a predetermined depth in the workpiece. A special locking arrangement is

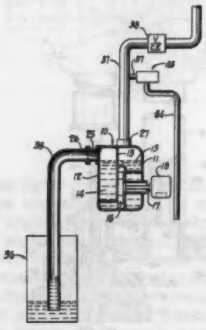
provided for securing the auxiliary tool in the adjusted position. The auxiliary tool also performs the very important additional function of supporting and guiding the drill through a drill jig bushing.



3,575,521
AIR RELEASE VALVE FOR SELF-PRIMING CENTRIFUGAL PUMP

Robert J. Porter, Mansfield, and Stanley B. McFarlin, Jeromesville, Ohio, assignors to The Gorman-Rupp Company

Filed Nov. 5, 1968, Ser. No. 773,549
Int. Cl. F04d *9/00*; **F16t** *1/20*; **F16k** *15/00*
U.S. Cl. 415—27 **12 Claims**



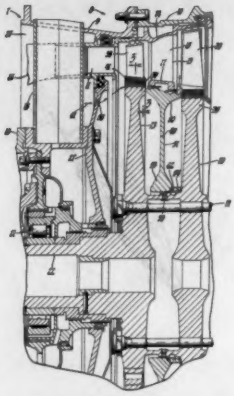
An automatic air release valve is connected to the discharge side of a self-priming centrifugal pump for venting air from the pumping system during the priming cycle. The valve automatically closes upon completion of the priming cycle to prevent of liquid during the pumping cycle.

3,575,522
TURBINE COOLING

Samuel Melenchuk, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 30, 1968, Ser. No. 756,673
Int. Cl. F01d *5/08*
U.S. Cl. 415—112 **6 Claims**

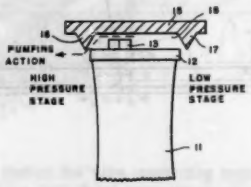
An arrangement for cooling the rim of the first to second stage spacer of a multistage turbine of a gas turbine engine. Cooling air supplied to the forward face of the first stage wheel flows through blade slots below the blade roots and is discharged from the turbine wheel over the outer surface of the adjacent spacer through the clearance gap between it and the inner shroud of the second stage nozzle. Some of the spaces under the blade bases are closed by inserted air seals to regulate the quantity of cooling air and spacer temperature drop desired.



3,575,523
LABYRINTH SEAL FOR AXIAL FLOW FLUID MACHINES

Fred J. Gross, Jr., Glastonbury, Conn., assignor to the United States of America as represented by the Secretary of the Navy

Filed Dec. 5, 1968, Ser. No. 781,423
Int. Cl. F01d *5/20*
U.S. Cl. 415—172 **1 Claim**



A sealing device in a turbine for preventing excessive leakage of motive fluid between a stator and the tips of rotor blades, the leakage being from a high-pressure side to a low-pressure side, including an airfoil provided on the outer periphery of each rotor blade with the airfoil being skewed to pump the leakage fluid back to the high-pressure side.

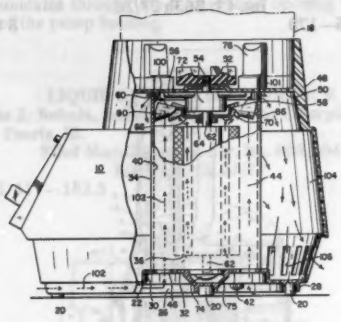
3,575,524
AIR FOIL FAN

Michael Adajian, Canton, Conn., assignor to Dynamics Corporation of America, New York, N.Y.

Filed Aug. 28, 1969, Ser. No. 853,783
Int. Cl. F04d *7/00*
U.S. Cl. 415—213 **9 Claims**

A multibladed rotatable fan, for cooling motors and the like within a confined housing, having air foil blades designed to produce maximum air flow axially within the limited cross-

sectional area of the housing and discharge the air at an angle from the housing while maintaining a minimum noise level and reduced turbulence at high speeds within the housing.

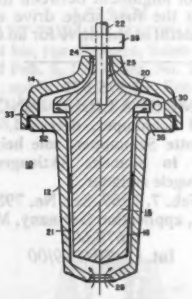


3,575,525

PUMP STRUCTURE WITH CONICAL SHAPED INLET PORTION

Leonard J. Fox, Lima, Ohio, and Paul E. Kueser, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 18, 1968, Ser. No. 776,509
Int. Cl. F04d *13/12, 25/16, 25/06*
U.S. Cl. 415—215 **4 Claims**



A pump, particularly suitable for pumping liquid molten metals, comprising an elongated, tapered or cone-shaped rotor disposed coaxially in a housing structure having an inner space with a similar shape, and having inlet and outlet ends, the radii of the rotor and/or the inner space of the housing increasing in the direction of the outlet end, the rotor and housing forming a space therebetween for directing a flow of liquid therethrough.

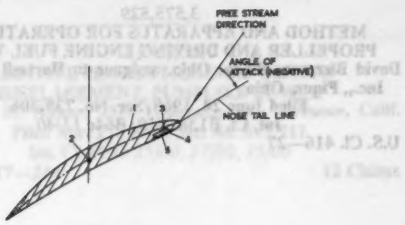
3,575,526

SHIP'S PROPELLER AND METHOD OF CHANGING THE PITCH THEREOF

Leonard Anthonie Van Gunsteren, Helvoirt, Netherlands, assignor to: LIPS, N.V. Drunen, Netherlands

Filed Apr. 8, 1969, Ser. No. 814,256
Claims priority, application Great Britain, Apr. 8, 1968, 16,873
Int. Cl. B63h *3/00*
U.S. Cl. 416—1 **13 Claims**

The forces necessary to change the pitch of a ship's propeller of variable pitch are reduced by reducing the hydrodynamic torque during the pitch change. This is done by passing fluid comprising a gas or a liquid through the propeller blade and emitting it from the propeller blade on the suction side of the blade at a distance of 3 to 15 percent of the width of the suction side of the blade measured from the leading edge.

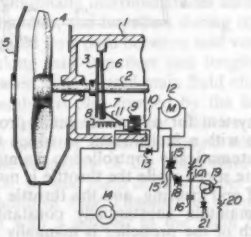


3,575,527

ELECTRIC FAN

Ichiro Watanabe, Neyagawa-shi, and Atsushi Sumitani, Nishinomiya-shi, Japan, assignors to Matsushita Seiko Co., Ltd., Osaka, Japan

Filed July 7, 1969, Ser. No. 839,244
Claims priority, application Japan, July 25, 1968, 43/53170
Int. Cl. F04d *25/08*
U.S. Cl. 416—32 **15 Claims**



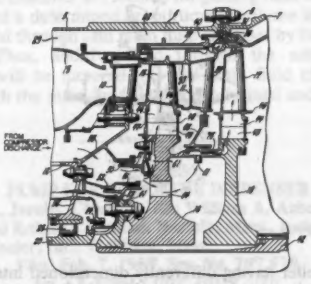
An electric fan with a safety device by which a rotating impeller is stopped at once when a hand gets close to the impeller.

3,575,528

TURBINE ROTOR COOLING

Paul E. Beam, Jr, and Esten W. Spears, Jr, Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

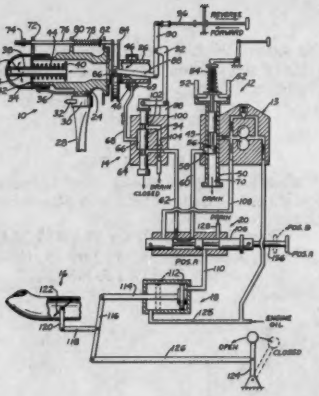
Filed Oct. 28, 1968, Ser. No. 770,920
Int. Cl. F01d *5/08*
U.S. Cl. 416—39 **11 Claims**



Flow of cooling air through the rotor of a gas turbine is varied by a valve mounted in the rotor including a bimetal

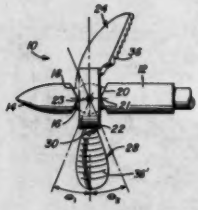
ring which warps as a function of temperature to vary an annular valve opening. Centrifugal force also may affect the valve to a desired extent.

3,575,529
METHOD AND APPARATUS FOR OPERATING A PROPELLER AND DRIVING ENGINE FUEL VALVE
David Bierman, Piqua, Ohio, assignor to Hartzell Propeller, Inc.,, Piqua, Ohio
Filed June 24, 1968, Ser. No. 739,306
Int. Cl. B13h *3/10*; B64c *11/40*
U.S. Cl. 416—27 14 Claims



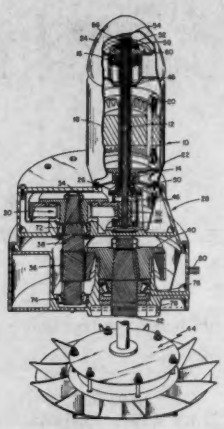
A control system for a variable pitch propeller having a driving engine with a fuel throttle in which the pitch of the propeller is automatically controlled to maintain substantially constant engine speed while the throttle is manually adjusted during takeoff and cruising, and the throttle is automatically adjusted to maintain substantially constant engine speed while the pitch of the propeller is manually adjusted during landing and taxiing. A single control lever is provided for selectively making one or the other system of operation effective.

3,575,530
VARIABLE PITCH PROPELLER
Clifton W. Hall, Rte. 17, Knoxville, Tenn.
Filed Sept. 5, 1968, Ser. No. 757,670
Int. Cl. B63h *3/00*
U.S. Cl. 416—131 8 Claims



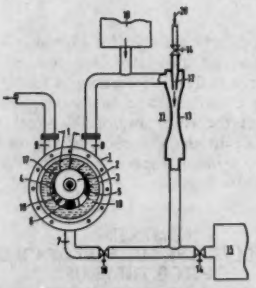
A propeller having differently dimensioned integrally connected blades positioned on a drive shaft in nonsymmetrical relationship. As the blades rotate with respect to the drive shaft, one of blades changes its blade angle of attack while the other remains at a constant blade angle of attack.

3,575,531
MOTOR AND GEAR SYSTEM
Eliot K. Buckingham, Springfield, Vt., assignor to Bird Machine Company, South Walpole, Mass.
Filed Dec. 11, 1968, Ser. No. 782,979
Int. Cl. B63h *21/28*
U.S. Cl. 416—170 8 Claims



A high horsepower motor and gear system is provided in which the motor has a hollow drive shaft and the first stage drive gear has a long shaft extending through the hollow drive shaft and fixedly attached thereto at its far end, the latter shaft being sufficiently resilient to absorb positional errors which would otherwise result in high dynamic load exerted between the first gear pair. The system permits reduction in gear size which would otherwise be required, close coupling and ease of alignment between the two mentioned shafts and between the first stage drive and driven gears, being particularly useful as the drive for an aerator impeller.

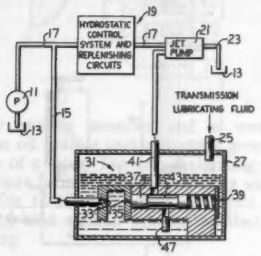
3,575,532
GAS PUMP OF A LIQUID-RING TYPE
Kurt Mugele; Paul Schnapper, deceased, late of Erlangen, Germany and Lotte Schnapper, sole heir, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany, said Mugele assignor
Filed Feb. 7, 1969, Ser. No. 798,274
Claims priority, application Germany, Mar. 15, 1968, 1,678,604
Int. Cl. F04f *19/00*
U.S. Cl. 417—69 8 Claims



A gas pump of a liquid-ring type whose housing structure has a first suction opening and a pressure opening at the respective localities where the liquid ring, formed by centrifugal force during operation of the pump rotor, penetrates most deeply and least deeply into the intervane spaces of the rotor and is additionally provided with at least one further suction opening which is located between the first suction opening and the pressure opening. The additional suction

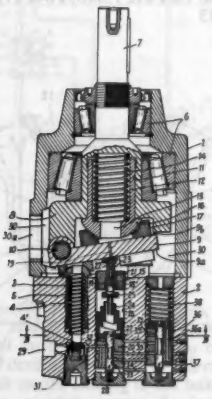
opening, relative to the direction of rotor rotation, has its leading end spaced from the lagging end of the first suction opening an amount equal to, or larger than, the vane division of the rotor. A suction duct is connected to the additional suction opening which is separate from the suction duct that communicates through the first suction opening with the interior of the pump housing.

3,575,533
LIQUID LEVEL SENSING DEVICE
Thomas J. Bubula, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 20, 1969, Ser. No. 808,904
Int. Cl. F16k *21/18*
U.S. Cl. 417—182.5 **4 Claims**



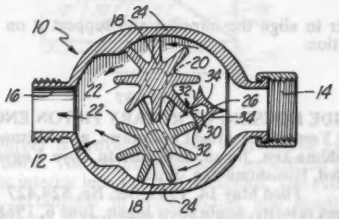
A liquid level sensing device wherein, when the liquid level drops below a predetermined amount, fluid at high velocity exerts a force against one end of a valve spool, causing movement of the spool against a biasing force. When the liquid level rises above the predetermined amount, the high velocity fluid is dissipated within the liquid by friction.

3,575,534
CONSTANT TORQUE HYDRAULIC PUMP
Gerard Leduc, 84 bis, rue d'Alsace, Saint-Die, France
Filed Feb. 5, 1969, Ser. No. 796,795
Claims priority, application France, Feb. 7, 1968, 138,941
Int. Cl. F01b *3/00, 13/04;* F04b *49/00*
U.S. Cl. 417—218 **9 Claims**



A constant torque hydraulic pump having a swashplate of variable inclination pivotally mounted on a support and rotatable about a predetermined axis. The hydraulic control piston is mounted within the support for modifying the inclination of the swashplate, and a regulating valve is in fluid communication with an outlet orifice of the pump and is coaxially located with respect to the axis. A calibrated orifice assembly is located adjacent to the swashplate, and a spring bearing is located between the regulating valve and the calibrated orifice assembly for enabling inclination of the swashplate in accordance with the pressure at the outlet orifice to maintain a substantially constant driving torque for the pump.

3,575,535
ADDITIVE PROPORTIONING, POSITIVE DISPLACEMENT, PUMPLIKE DEVICE
Frederick H. Bickar, 2517 Lesserman St., Torrance, Calif.
Filed Apr. 21, 1969, Ser. No. 817,911
Int. Cl. F04b *25/00, 17/00, 35/00*
U.S. Cl. 417—244 **12 Claims**

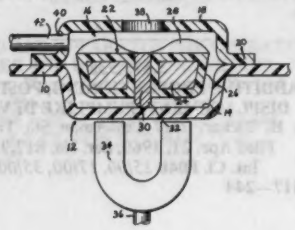


A pair of multivaned impellers are rotatably mounted interengaged longitudinally intermediate an inlet and outlet of a main fluid chamber, the impellers during rotation passing fluid in a bifurcated flow path between said vanes transversely outwardly along said impellers and longitudinally along transversely spaced sides of said main fluid chamber. An additive fluid chamber is also formed by the housing spaced from the main fluid chamber, said additive fluid chamber having similarly mounted impellers therein which are axially aligned with the impellers of the main fluid chamber and secured rotatable by said main fluid chamber impellers. The outlet of the additive fluid chamber is connected in fluid communication with a diffuser in the main fluid chamber, said diffuser being positioned midway of said impellers in the main fluid chamber extending axially elongated therealong at the chamber inlet side thereof. Furthermore, the diffuser has outlets transversely midway thereof directed toward the impellers and oppositely generally transversely extending arcuate surfaces closely adjacent each of said impellers extending transversely at least equal to the circumferential spacing of the vanes on the impellers. The chamber inlet side of the diffuser is preferably formed with arcuate surfaces similar to the before-mentioned arcuate surfaces but projecting arcuately in reverse fashion directing fluid from said chamber inlet in said bifurcated flow path. Finally, a diffuser may be similarly positioned in the additive fluid chamber preferably being formed of similar exterior shape, and the impellers of the additive fluid chamber are formed for passing fluid through said chamber of a determined proportionate volume less than the fluid passed through said main fluid chamber by the impellers thereof. Thus, additive fluid through the additive fluid chamber will be metered into the main fluid chamber for mixing with the main fluid flow in determined and exact proportion.

3,575,536
PUMP FOR BEVERAGE DISPENSER
William H. Jacobs, Chestnut Hill; William A. Azberger, Medfield, and Robert L. Norton, Norfolk, Mass., assignors to Jet Spray Cooler, Inc., Waltham, Mass.
Filed Feb. 7, 1969, Ser. No. 797,578
Int. Cl. F04d *13/02;* H02k *5/10*
U.S. Cl. 417—420 **9 Claims**

A pump assembly for beverage dispensers having a pump chamber within which an impeller is disposed free of any

shaft and bushing connections. A magnet embedded in the impeller cooperates with the driving magnet outside the



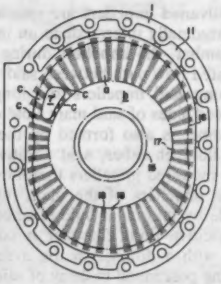
chamber to align the impeller and support it on its bearing for rotation.

3,575,537

SIDE HOUSING OF ROTARY PISTON ENGINE

Kenichi Yamamoto; Atushi Nakazawa, and Mitsunori Utsumi, Hiroshima-ken, Japan, assignors to Toyo Kogyo Company Limited, Hiroshima-ken, Japan

Filed May 14, 1969, Ser. No. 824,427
Claims priority, application Japan, June 6, 1968, 43/39162
Int. Cl. F01c *1/02, 1/42, 21/00*
U.S. Cl. 418—60 **5 Claims**



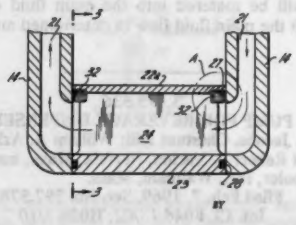
A side housing for a rotary piston engine of trochoidal configuration having an inner surface exposed to the combustion gas and heat treated in striped pattern only in the restricted area located outwardly of an envelope of loci delineated by the oil sealing member mounted on the rotor means so as to alleviate the adverse effect due to heat treatment.

3,575,538

HOUSING SEALING MEANS FOR ROTARY ENGINES

Murray Berkowitz, Woodcliff Lake, and Charles Lombaerde, Ridgewood, N.J., assignors to Curtiss-Wright Corporation

Filed July 24, 1969, Ser. No. 844,272
Int. Cl. F01c *21/06;* **F03c** *3/00;* **F04c** *29/04*
U.S. Cl. 418—83 **6 Claims**



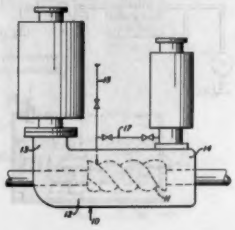
A means of sealing an engine housing against coolant leakage, by positioning a gasket ring with a small retainer ring lodged against a housing shoulder, thus obviating the former heavy wall thickness required for seating a gasket in a groove in the edge thereof, and thereby resulting in reduced fabrication costs and improved cooling by the use of thinner wall.

3,575,539

APPARATUS FOR SUPPRESSING VIBRATION IN A HELICAL-ROTOR AXIAL-FLOW COMPRESSOR SUPPLIED WITH SEALING WATER

Dennis J. Hanick, Elizabeth, Pa., assignor to United States Steel Corporation

Filed Nov. 27, 1968, Ser. No. 779,580
Int. Cl. F04c *17/04*
U.S. Cl. 418—99 **2 Claims**



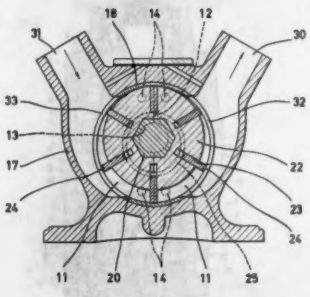
A helical-rotor axial flow compressor has a sealing-water inlet extending through its casing. A water-supply pipe is connected to said inlet. A gas-supply pipe is tapped into said water-supply pipe and is connected to a source of gas under a pressure higher than that of the water in the water-supply pipe. This suppresses the vibration otherwise resulting from the stopping or shutting off of the water stream entering into the casing, by the passage of the rotor lands.

3,575,540

AIRTIGHT EQUIPMENT IN A ROTARY PUMP

Kazuo Satake, No. 77, 2-cho, Ohtori Minami-Machi, Sakai-shi, Japan

Filed May 15, 1969, Ser. No. 824,788
Int. Cl. F01c *19/08;* **F04c** *27/00*
U.S. Cl. 418—133 **3 Claims**



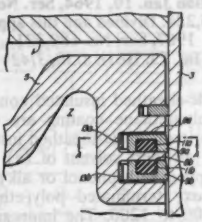
Means for improving the fluid tightness of a rotary pump. A bisected annular plate is provided between each end of the rotor and the casing through which the drive shaft extends, one-half of the plate being on the intake side of the casing and the other half being on the discharge side of the casing. The half of the plate on the intake side is drawn toward the rotor by the reduced pressure at the intake side, while the half of the plate on the discharge side is urged away from the rotor by the pressure.

3,575,541

OIL SEALING UNIT IN ROTARY PISTON ENGINE

Yoshitugu Hamada, Nagahama-Shi, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Oct. 23, 1969, Ser. No. 868,849
Claims priority, application Japan, Dec. 11, 1968, 107513/68
Int. Cl. F01c 19/00, 1/02
U.S. Cl. 418—144 1 Claim



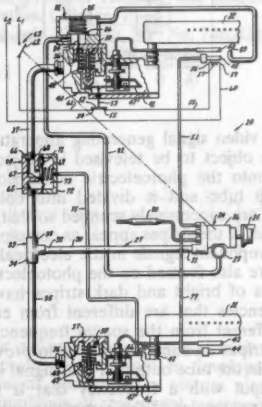
An annular sealing member and a wavy spring are mounted in an oil sealing unit mounting groove formed on each side face of a rotor. The annular sealing member has a recess or recesses formed in the contacting surface with the wavy spring for receiving a crest or crests of said wavy spring, whereby said annular sealing member is secured to said wavy spring.

3,575,542

FUEL CONTROL SYSTEM FOR A COOKING APPARATUS OR THE LIKE

Charles D. Branson, Greensburg, and Francis S. Genbauffe, Irwin, Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 10, 1968, Ser. No. 782,580
Int. Cl. F23q 9/08
U.S. Cl. 431—58 17 Claims



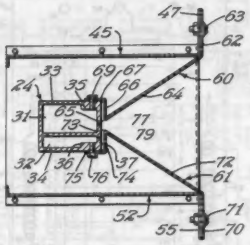
This disclosure relates to a control system for a bake burner and a broil burner of a domestic oven or the like wherein a control device is adapted to interconnect a source of fuel to a conduit means leading to the bake burner and the broil burner, the conduit means having fluid pressure operated valve means therein intermediate the control device and one of the burners with the valve means being so constructed and arranged that the same will direct the fuel issuing thereto from the control device to that one burner only when the selector means of the control device is set for operation of that one burner. The pressure-operated valve means is caused to be moved to its closed position by the pressure of the flow of fuel to the other burner when the selector means of the control device is set for operation of that one burner.

3,575,543

GAS BURNER

Richard Weatherston, St. Paul, Minn., assignor to Weather-Rite, Inc., County of Ramsey, Minn.

Filed Nov. 29, 1968, Ser. No. 779,671
Int. Cl. F23q 9/00
U.S. Cl. 431—285 10 Claims



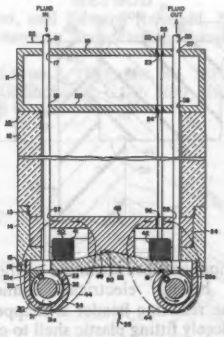
A gas burner is provided formed of a hollow elongated metal extrusion. The extrusion includes an internal partition dividing the interior into a pair of manifolds. The extrusion is preferably rectangular in cross section and longitudinally spaced apertures in one wall of the extrusion communicate with each of the two manifolds. The ends of the extrusion are closed, and gas under pressure may be connected to each manifold to discharge gas through said apertures. One row of apertures preferably is supplied with lower pressure gas, to act as low flame pilot lights for the gas intermittently directed to the other manifold.

3,575,544

ELECTRIC ARC HEATING AND MELTING

Armin M. Bruning, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Oct. 29, 1964, Ser. No. 407,332. Divided and this application Oct. 14, 1969, Ser. No. 866,275
Int. Cl. H05b 7/08
U.S. Cl. 13—9 7 Claims

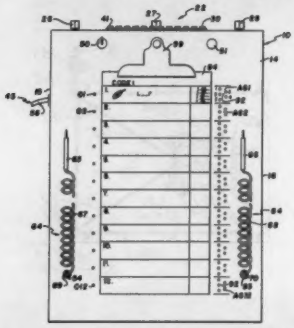


A nonconsumable electrode having a supporting structure for a fluid cooled tip forming an arcing surface, having a magnetic field coil therein for setting up a magnetic field at the arcing surface which exerts a force on the arc which causes the arc to move substantially continuously over the arcing surface while heat flux is removed from the arcing surface at a sufficiently high rate to prevent excessive deterioration of the arcing surface as a result of arc action, is utilized in gas heating and metal heating and melting, the arc taking place to a melt composed at least partially of conductive material, to another electrode, or three arcs may be simultaneously produced by three phase alternating current operation.

3,575,545
EDUCATIONAL APPARATUS

Archibald Millar, 2301 Victor St., Victoria, B. C., Canada

Filed Nov. 25, 1968, Ser. No. 778,384
Int. Cl. G09b 7/06
U.S. Cl. 35—9 5 Claims

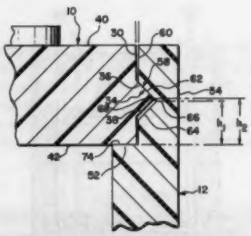


Apparatus for checking the answers to problems on a test paper. A panel on the apparatus has question and answer terminals corresponding to the problems and solutions. Student-operated conductor means are used to complete electric circuits between the question and answer terminals whereby to energize signalling means which indicate whether or not a question has been answered correctly. Programming circuits and switch means enable a teacher to program the apparatus according to the type of test being given and his selected arrangement of the correct answers to the problems on the test paper.

3,575,546
HEADER AND SHELL ENCASEMENT FOR ELECTRONIC COMPONENTS AND THE LIKE

James P. Liautaud, 141 Grissom Lane, Hoffman Estates, Ill.

Filed Feb. 24, 1970, Ser. No. 13,287
Int. Cl. H05k 5/00
U.S. Cl. 174—50.52 2 Claims



Electronic components are mounted to the back side of a plastic header having electrical connectors passing therethrough. The resulting header is snapped into place in the mouth of a closely fitting plastic shell to complete the enclosure of the electronic components. The header and shell are manufactured from strong, resilient plastic. The header-shell combination includes detent means positioned along one pair of opposite edges which continuously exert a camming action which compresses a peripheral inner face of the header against an opposing shoulder on the shell to provide a compression seal. Once snapped, however, it is extremely difficult to remove the header from the shell.

In a preferred method utilizing the novel header and shell, the shell is initially partially filled with a hardenable liquid. When the header and components are snapped in place, the components are embedded in the hardenable liquid. The resulting assembly is immediately ready for shipment, storage, or use, without curing delay, or further special handling.

3,575,547
INSULATION IMPREGNATED WITH A POLYURETHANE RENDERED FLAMEPROOF WITH A HALOGENATED BISPHENOL AND A CONDUCTOR INSULATED WITH SUCH INSULATION

David E. Cordier, Hamden, Conn.; Victor V. D'Anciccio, Kalamazoo, Mich., and Richard A. Kolakowski, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

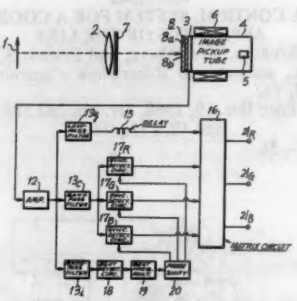
Original application Jan. 10, 1964, Ser. No. 336,889, now Patent No. 3,375,224. Divided and this application Nov. 3, 1967, Ser. No. 680,331
Int. Cl. H01b 3/30, 3/42
U.S. Cl. 174—121 2 Claims

Fabric and fabric-sheathed insulated conductors having a tough, flexible polyurethane coating are obtained by impregnating the fabric or fabric-sheathed insulated conductor with a mixture in an inert solvent of (a) a polymethylene polyisocyanate capped with phenol or alkyl (C_1—$_9$) phenol and (b) an hydroxy terminated poly(ethylene/propylene) adipate of EW. 300 to 1200. The impregnated material is cured by heating at 300° F. to 500° F.

3,575,548
COLOR VIDEO SIGNAL GENERATING APPARATUS

Hiromichi Kurokawa, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1969, Ser. No. 813,937
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4st 7 Claims



In a color video signal generating apparatus in which an image of the object to be televised is projected through a color filter onto the photoelectric conversion layer of an image pickup tube and is divided into color component stripes which are successively scanned so that the respective light intensities of the stripes appear as corresponding successive color component signals in the electrical output of the tube, there are also formed on the photoelectric conversion layer two sets of bright and dark stripes having respective spatial frequencies that are different from each other and also each different from the spatial frequency of the color component stripes on such layer so as to provide respective index signals in the tube output, a beat signal is derived from the tube output with a frequency that is the difference between the frequencies of the respective index signals, and such beat signal, which may be frequency multiplied to correspond to the frequency of the color component signals, is employed as a reference for separating the color component signals from each other in the tube output.

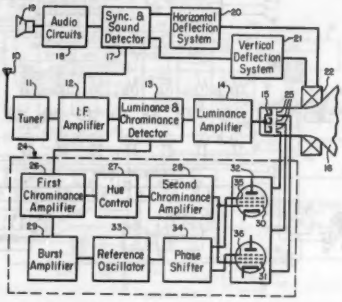
3,575,549
HUE CONTROL CIRCUIT

Charles F. Hepner, Chicago, Ill., and David L. Zahn, Milwaukee, Wis., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Sept. 17, 1969, Ser. No. 858,660
Int. Cl. H04n 9/44
U.S. Cl. 178—5.4HE 9 Claims

A phase shifting network for changing the phase of the chrominance signal or the reference signal to adjust the hue

content of the reproduced image in a color television receiver. The receiver includes a demodulator coupled to a source of chrominance signal and to a source of color reference signal. The phase shifting network comprises a signal translating circuit in the form of a transistor having a base input terminal and emitter and collector output terminals. The chrominance signal source is coupled to the base input terminal so that a first output signal is developed at the emitter and a second output signal, substantially opposite the



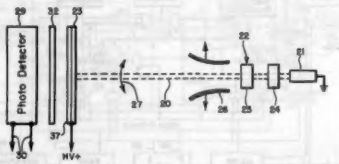
phase to the first output signal, is developed at the collector. A phase shift circuit comprising a resistor and a tunable inductance varactor combination, in parallel, are coupled across the emitter and collector and respond to the output signals to derive a wave signal at the junction of the resistor and the inductance varactor combination. The effective reactance contributed by the varactor to the phase shift circuit is adjustable so as to permit a selective shift of the phase of the derived signal relative to the applied signal.

3,575,550

OPTICAL APPARATUS FOR DEVELOPING A FREQUENCY-DOMAIN SIGNAL

Adrianus Korpel, Prospect Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed July 23, 1968, Ser. No. 746,826
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.1 **6 Claims**



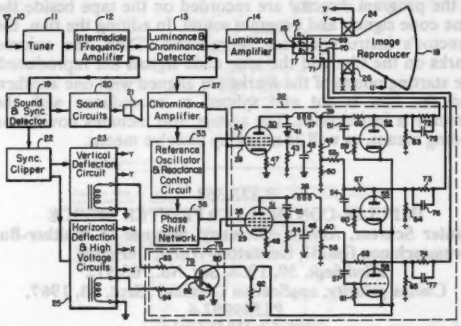
In a system for synthesizing frequency-domain video information, a composite video signal is developed in which frequency represents position of a picture element on an image and the amplitude of that signal represents picture or video amplitude at that position. To accomplish this, a vertically elongated band of light is caused to sweep in a horizontal direction; this may be achieved by sweeping a sheet beam of electrons across a luminescent screen. The light intensity is altered differently in individually different vertically separated portions of the band of light; a transparency exhibiting differences in transmission to the light in the vertical direction effects such alteration when placed in the path of the light. The light also is interrupted at individually different rates in individually different vertically separated portions of the band of light; a series of opaque stripes, fanned apart about a generally vertical axis and disposed in the path of the band of light, is illustrated as a means for accomplishing that result. Finally, a photodetector intercepts the altered and interrupted light and develops an electrical output signal that includes the desired frequency-domain video information.

3,575,551

CHROMINANCE DEMODULATOR BLANKING CIRCUIT

Robert W. Krug, Janesville, Wis., assignor to Zenith Radio Corporation

Filed May 17, 1968, Ser. No. 730,108
Int. Cl. H04n *9/50, 5/44*
U.S. Cl. 178—54 **4 Claims**



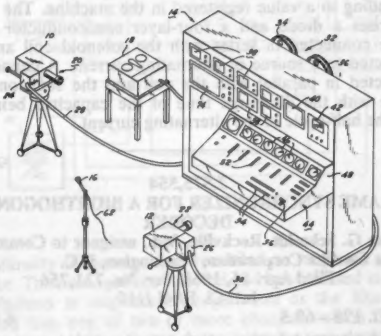
A clamping circuit for establishing a DC reference level in each of the three matrix amplifier triodes of an AC-coupled active-matrix type chrominance demodulator. A single transistor shunt-connected across the common cathode resistor of the triodes impresses negative-polarity retrace-interval pulses on their cathodes, causing them to conduct heavily during each retrace interval and charge their respective grid coupling capacitors to predetermined DC reference levels. The transistor derives its operating power from the quiescent cathode current drawn by the triodes through the common cathode resistor and does not require ancillary power supply or coupling circuitry. The circuit further provides horizontal and vertical retrace blanking to the receiver image reproducer, and in an alternate embodiment the base-emitter junction of the transistor is utilized to develop a DC control potential for the receiver high voltage regulator circuitry.

3,575,552

MOTION PICTURE PRODUCTION SYSTEM AND METHOD

Norman H. Grant, and Edward Reingold, New York, N.Y., assignors to American Broadcasting Companies, Inc., New York, N.Y.

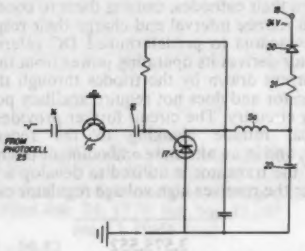
Filed Sept. 9, 1968, Ser. No. 758,286
Int. Cl. G03b *31/00;* **G11b** *5/00;* **H04h** *7/18*
U.S. Cl. 178—5.8 **18 Claims**



In the production system, up to six camera units, each including a video camera and a motion picture camera, are used in making a motion picture. The video signals from the video cameras are sent to a control console where they are displayed on individual television monitors. By remote con-

trol of the camera unit from the console, the cameras are operated so that, if desired, only one of the cameras operates at a given time, and only the film from that camera is used in making the motion picture. The edge of the film in each camera is marked by exposing it to a colored light whenever that camera is operating, and a coded audio tone signal unique to that camera is recorded beside the program sound on a separate magnetic tape simultaneously with the marking of the motion picture film. At the same time, the instructions of the program director are recorded on the tape beside the tone code signals and program sound. In editing the film, the director's instructions are reproduced. Then, the colored marks on the film and the tone code signals are reproduced, the starting points of the marks are aligned with one another, and the film is cut and spliced in accordance with the director' s instructions. The system also includes novel tone coding means, as well as novel lap dissolve means.

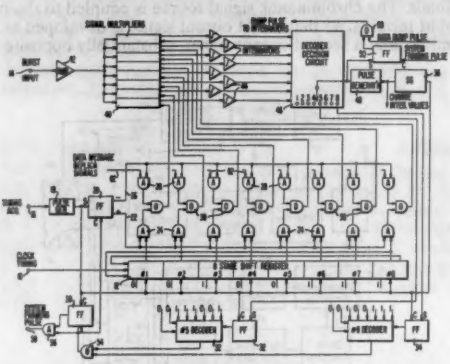
3,575,553
IMPULSE-CONTROLLED PRINTER DEVICE
Gunter Schrem, Albeck, Germany, assignor to Walther-Buromaschinen GmbH, Gerstetten-Wurtt, Germany
Filed Sept. 30, 1968, Ser. No. 763,572
Claims priority, application Germany, Sept. 28, 1967, P1549962.4
Int. Cl. H04l *17/16*
U.S. Cl. 178—38 **2 Claims**



There is disclosed a circuit for energizing the solenoid coil of an electromagnet operatively connected to move a type member of a printing mechanism in an electronic data processing machine into a position to print a symbol corresponding to a value registered in the machine. The circuit comprises a diode and a four-layer semiconductor power device connected in series with the solenoid coil and also connected to a source of alternating current. A capacitor is connected in parallel with the coil and the semiconductor device with the discharge time of the capacitor being less than the half-cycle of the alternating current.

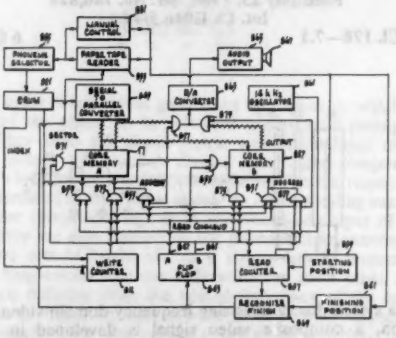
3,575,554
FRAME SYNCHRONIZER FOR A BIORTHOGONAL DECODER
William G. Schmidt, Rockville, Md., assignor to Communications Satellite Corporation, Washington, D.C.
Filed Apr. 16, 1968, Ser. No. 721,756
Int. Cl. H04l *1/10*
U.S. Cl. 178—69.5 **6 Claims**

An 8-bit word having good autocorrelation properties is recirculated through an eight stage shift register at a receiving station to simultaneously generate the eight phases of the word. At the same time, a sending station having an 8-bit frame length transmits a repeating sequence of the same word. The transmitted word, now corrupted by channel noise, is then correlation detected with the eight phases of itself generated at the receiving station. The phase producing the largest correlation output is selected as the synchronized



phase or frame, and is used to generate framing pulses during the subsequent data transmission.

3,575,555
SPEECH SYNTHESIZER PROVIDING SMOOTH TRANSISTION BETWEEN ADJACENT PHONEMES
Joseph F. Schanne, Cheltenham, Pa., assignor to RCA Corporation
Filed Feb. 26, 1968, Ser. No. 708,323
Int. Cl. G10l *1/02*
U.S. Cl. 179—1 **6 Claims**

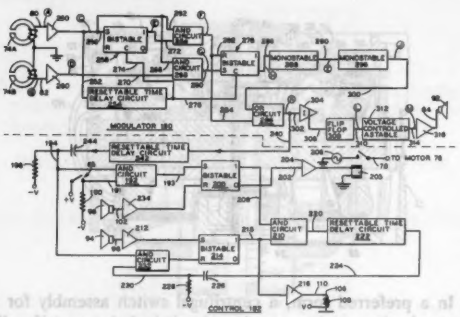


An apparatus for synthesizing speech from phonemes is described. The smooth transition of one phoneme into the next is accomplished by a timewise truncation of the end of the leading phoneme and of the beginning of the following phoneme so that the formants are continuous over the junction. The apparatus described stores phonemes in digital fashion to permit their retrieval, starting and stopping the retrieval so that the desired truncation is achieved. A drum is used to store all the phonemes required and delays between phonemes are prevented by using core memories as temporary storage, transferring from the drum to one of the core memories while concurrently extracting the preceding phoneme from another core memory to be converted to sound.

3,575,556
DATA TRANSMISSION APPARATUS AND METHODS

Edgar Wolf, New Hyde Park, and Franics C. Marino, Huntington, N.Y., assignors to Digitronics Corporation, Albertson, N.Y.

Filed Nov. 13, 1967, Ser. No. 684,098
Int. Cl. H04m *11/06*
U.S. Cl. 179—2 6 Claims

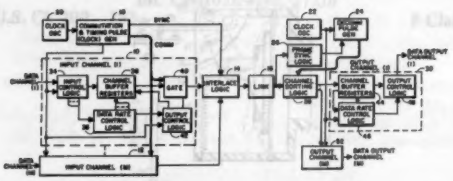


A data transmission system comprises a magnetic tape recorder, and a signal transmitter connected via a telephone channel and a signal receiver. The magnetic tape recorder includes a magnetic recording transducer which records characters as a combination of bits serially along the magnetic tape. The recorded character bits are interleaved with sprocket bits. The so recorded magnetic tape is then read to cause a signal transmitter to transmit tone signals via a telephone channel to a signal receiver.

3,575,557
TIME DIVISION MULTIPLEX SYSTEM

Harvey H. McCowen, Rochester, N.Y., assignor to General Dynamics Corporation

Filed July 25, 1968, Ser. No. 747,642
Int. Cl. H04l *7/06*
U.S. Cl. 179—15 14 Claims



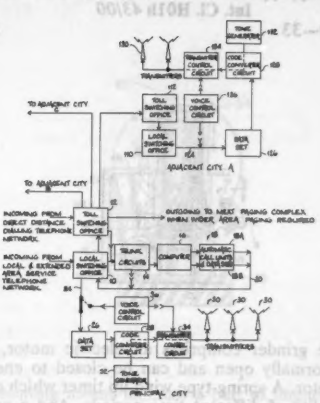
A time division multiplex system is described wherein several data input sources which run asynchronously are multiplexed onto a common link or line, together with coordination data to insure a synchronous flow of data into the line. The coordination data is used upon demultiplexing to control the rate at which demultiplexing is accomplished in order to keep the average rate of data flow through the system approximately constant.

3,575,558
TELEPHONE PAGING SYSTEM AND METHOD

Derek Leyburn, St. Laurent, Quebec; David Horton, Baie D'urf, Quebec; Edward G. F. Baker, Roxborough, Quebec, and Claude Lemieux, St. Bruno, Quebec, Canada, assignors to Bell Canada, Montreal, Quebec, Canada

Filed July 26, 1968, Ser. No. 754,522
Claims priority, application Canada, July 4, 1968, 024,220
Int. Cl. H04q *7/00*
U.S. Cl. 179—41 7 Claims

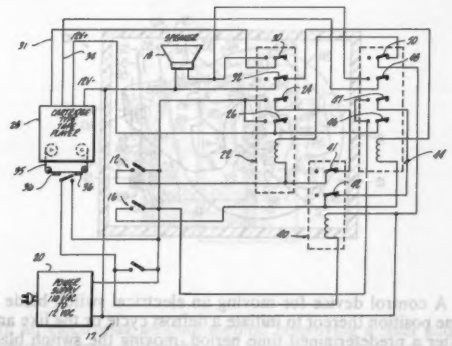
A telephone system and radio paging transmitters are combined by using dialed assigned telephone numbers to cause an information storage device to indicate radio paging areas corresponding to the dialed assigned number and, through the telephone system, to cause actuation of radio paging transmitters serving the radio paging areas to transmit a predetermined radio signal associated with the dialed assigned number. In some cases this will include a first information storage device, connecting itself to other information storage devices in order to achieve the connection to all the radio paging areas involved. Voice communication may also be provided for between the dialling party and the bearer of a radio paging receiver corresponding to an actuated paging transmitter.



3,575,559
MESSAGE SELECTOR WITH PLURAL SENSORS TRIGGERING RANDOM SELECTION

Francis X. Tierney, 96 Gardenglen, West Covina, Calif. 91790

Filed Sept. 23, 1968, Ser. No. 761,512
Int. Cl. G11b *15/00*
U.S. Cl. 177—100.1 4 Claims



A plurality of messages are recorded on magnetic tape or the like. The messages are selected and broadcasted in a random fashion in response to a golf ball or the like being knocked into one of two or more channels which contain sensors or switches that actuate circuits associated with respective sensors.

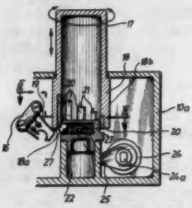
ERRATA

For Classes 179—100.1 thru 200—19 see:
Patent Nos. 3,575,575 thru 3,575,579

3,575,560
CONTROL ARRANGEMENT FOR ELECTRICAL COMMINUTOR

Rolf Mayer, and Walter Mentzel, Giengen, Germany, assignors to Robert Bosch Hausgerate G.m.b.H., Giengen, Germany

Filed June 17, 1968, Ser. No. 737,700
Claims priority, application Germany, July 1, 1967, B93276X
Int. Cl. H01h 43/00
U.S. Cl. 200—33 2 Claims

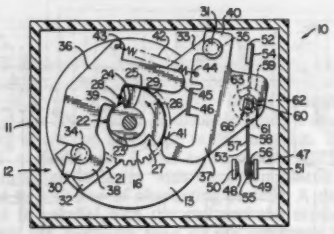


A coffee grinder comprises an electric motor, a switch which is normally open and can be closed to energize the electric motor. A spring-type wind-up timer which can be set for a plurality of different time periods. And a pushbutton which can be depressed and turned and which, when turned, preselects the extent to which it can be depressed while, when it is depressed to the extent preselected by the turning, it closes the switch and simultaneously winds the timer to a predetermined extent. Unwinding of the timer restores the pushbutton to its starting position resulting in opening of the switch and stopping of the motor.

3,575,561
DEFROST CONTROL SYSTEM DEVICE WITH IMPROVED LEVER OPERATING MEANS

Robert L. Wooding, Wolcott, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 26, 1968, Ser. No. 779,129
Int. Cl. H01h 7/08, 43/10
U.S. Cl. 200—38 20 Claims

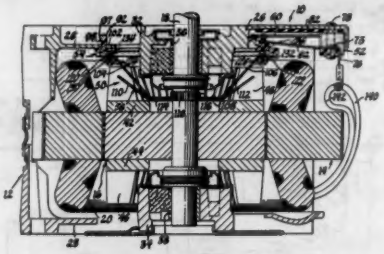


A control device for moving an electrical switch blade to one position thereof to initiate a defrost cycle or the like and, after a predetermined time period, moving the switch blade to another operating position thereof to terminate the defrost cycle, the control device having a pair of movable levers of which one is interconnected to the switch blade with the levers being continuously urged toward operative engagement with a cam means disposed therebetween. The cam means maintains the one lever in one position thereof until the defrost cycle is to be initiated whereby the one lever moves to another position thereof and remains in that position until the cam means causes the other lever means to engage against the one lever and move the same back to its one operating position, the cam means thereafter causing the other lever to move out of engagement with the one lever while maintaining the one lever in its one position thereof.

3,575,562
CENTRIFUGAL SWITCH ASSEMBLY FOR A MOTOR STARTING CIRCUIT

Jack A. Remke, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 24, 1969, Ser. No. 860,559
Int. Cl. H01h 35/10
U.S. Cl. 200—80 3 Claims

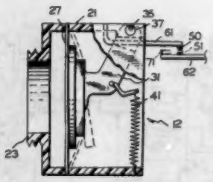


In a preferred form, a centrifugal switch assembly for a motor having a motor starting circuit includes centrifugally actuated spring fingers mounted on the motor shaft and extending radially outwardly between fan blades provided on one end of the motor rotor. The ends of the spring fingers engage an actuator plate which is slidably mounted on an end portion of the motor housing. The spring fingers move the actuator plate so as to engage and disengage switch contacts which are connected in the motor starting circuit.

3,575,563
AXIS TRANSLATOR SWITCHING MECHANISM

Carl Dexter Russell, Tulsa, Okla., assignor to Marvin O. Frantz, a fractional part interest

Filed Feb. 10, 1969, Ser. No. 798,049
Int. Cl. H01h 35/34
U.S. Cl. 200—83 4 Claims



The invention relates to a switch having a body with a contact arm supported by the body. A cam arm is loosely pivotally connected to the body and is adapted to close the contacts by camming the contact arm. Biasing means normally urge the cam arm in one direction to locate the cam arm in a first axis position and the switch actuator (which may comprise mechanical movement or fluid pressure) urges the cam arm in the opposite direction to a second axis position, which applies maximum force to the cam arm.

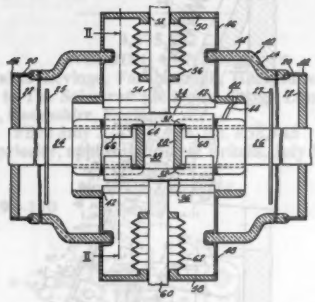
3,575,564
VACUUM-TYPE ELECTRIC CIRCUIT INTERRUPTER

Donald E. Weston, Chicago, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Sept. 10, 1969, Ser. No. 856,724
Int. Cl. H01h 33/66
U.S. Cl. 200—144 12 Claims

A vacuum interrupter comprises an evacuated housing into which a pair of rodlike stationary axially aligned spaced apart electrodes extend. The inner end of each electrode is capped with a cup-shaped arc runner having spiral slots therein. A

cylindrical arc shield having spiral slots therein surrounds the arc runners on each electrode and the gap therebetween. A pair of simultaneously movable bridging contacts are located in the housing on opposite sides thereof. Each bridging contact is reciprocably movable transversely to the axis on which the electrodes lie. Each bridging contact has an "open" position wherein it lies in or outside of an aperture in the cylin-



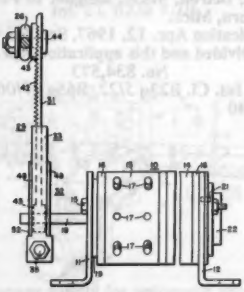
drical arc shield. Each bridging contact is movable from "open" to a "closed" position (and vice versa), through the aperture in the cylindrical arc shield and through apertures in the arc runners, wherein the bridging contact engages both electrodes. Each electrode is cylindrically shaped and that portion of the bridging contact engageable with the electrode is provided with a V-shaped notch which is partially filled with high vapor pressure metal such as bismuth.

3,575,565

OVER-TRAVEL DEVICE FOR ROTARY ELECTRIC SWITCH

Paul Silvius, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1968, Ser. No. 787,926
Int. Cl. H01h *3/48, 21/38*
U.S. Cl. 200—153 **8 Claims**



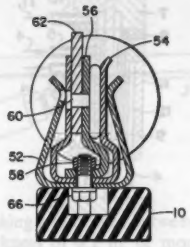
An overtravel device is provided for use with a rotary electric switch when the switch is utilized as an auxiliary control switch and actuated by a linkage mechanism connected to a main device, such as a power circuit breaker. The overtravel device includes a lever attached to the linkage mechanism and rotatably mounted between the legs of a U-shaped bracket which drives the shaft of the auxiliary switch. Rotation of the lever relative to the shaft is limited by leaf springs clamped to the bracket on opposite sides of the lever.

3,575,566

FUSE AND ELECTRICAL SWITCH BLADE MOUNTING MEANS

Tadeusz J. Rys, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.

Filed May 9, 1969, Ser. No. 823,413
Int. Cl. H01h *1/42, 21/54, 85/50*
U.S. Cl. 200—162 **4 Claims**



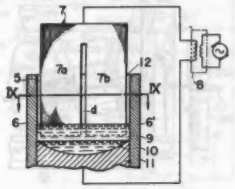
The mounting means includes a pair of aligned generally U-shaped spring members, a generally U-shaped mounting member disposed within the spring members, and a generally L-shaped mounting member having one leg dividing the space between the legs of the U-shaped mounting member and the other leg secured to the bight portion of the U-shaped mounting member. A flat switch blade is pivotally mounted on one side of the dividing leg and a flat blade terminal of a fuse is receivable on the other side of the dividing leg of the L-shaped mounting member.

3,575,567

ELECTROSLAG WELDING METHOD

Yasuhiro Nishio; Yoshihiro Yamamoto; Zenichiro Okamoto, and Hiroshi Nakagawa, Hiroshima-ken, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 16, 1968, Ser. No. 762,166
Int. Cl. B23k *9/18*
U.S. Cl. 219—73 **9 Claims**

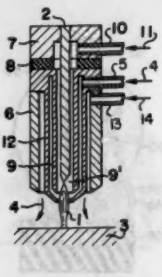


In an electroslag welding method employing a steel plate electrode inserted into the gap between the opposing surfaces of the base metal to be welded, at least that portion of the inserted electrode extending into the gap, when the overall width of the electrode is in excess of 300 mm., is divided into plural equal width sections each having a width of less than 300 mm. All of the sections of each electrode are commonly electrically connected to one terminal of a source of welding current. The electrode may comprise two physically separate sections commonly interconnected electrically to one terminal of the source, or may comprise a single electrode having that portion extending into the welding gap divided into two sections with the two sections being physically united to each other by that portion of the electrode outside the welding gap.

3,575,568
ARC TORCH

Haruo Tateno, Tokyo, Japan, assignor to Rikagaku Kenkyusho, Kitaadachi-gun, Japan

Filed May 31, 1968, Ser. No. 733,649
Claims priority, application Japan, June 8, 1967, 42/36720
Int. Cl. B23a 9/16, 9/00
U.S. Cl. 219—75 7 Claims

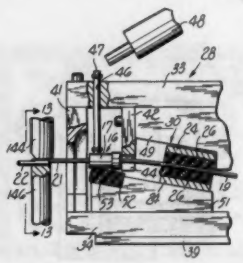


A method of establishing an electric arc in an electric arc torch having a cathode unit and a plurality of substantially coaxial bushings. The method comprises flowing an enveloper gas between the cathode unit and the adjacent bushing, establishing an arc between the tip of the cathode and the adjacent bushing, flowing an enveloper gas between the adjacent bushing and the next surrounding bushing, and subsequently shifting the end of the arc from the adjacent bushing to the workpiece and stopping the enveloper gas originally presented between the cathode unit and the adjacent bushing.

3,575,569
APPARATUS FOR WELDING WIRE LEADS TO THE TERMINALS OF ELECTRICAL COMPONENTS

Henry D. Mitchell, Jr., Winston-Salem, and Albert Q. Wooten, Mocksville, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 6, 1969, Ser. No. 796,986
Int. Cl. B23k 9/12; B21j 13/08
U.S. Cl. 219—79 7 Claims

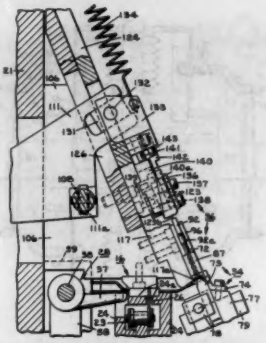


An automatic lead welding apparatus includes an article (solid electrolytic capacitor) carrying fixture mounted on a movable carriage, a welding head, an article detector, a carriage position detector, and a lead fabrication and transfer mechanism. Solid electrolytic capacitors are resiliently supported within the carrying fixture with anode wires projecting in cantilevered fashion. The carrying fixture is moved past the welding head where the detectors effect stoppage of the fixture successively to interpose each projecting anode wires within the welding head between a pair of relatively movable welding electrodes. The lead fabrication mechanism feeds, forms, and cuts a lead wire from a wire supply. The transfer mechanism grips and positions the formed lead under the interposed anode wire at which time the welding electrodes are successively operated to flex, clamp, and weld a cantilevered anode wire to a formed lead.

3,575,570
APPARATUS FOR FABRICATING A CONTACT ON AN ELECTRICALLY CONDUCTING MEMBER

John S. Gellatly, Lagrange, and James C. Houda, Jr, Downers Grove, Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 6, 1968, Ser. No. 781,841
Int. Cl. B23k 9/12, 11/00
U.S. Cl. 219—80 10 Claims

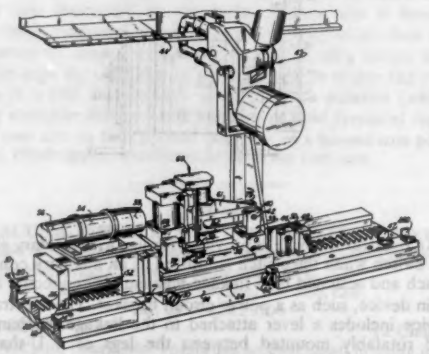


Apparatus for fabricating a contact on an electrically conducting member, such as one of a plurality of elongated wire springs of a terminal connector block assembly, includes a first shearing member having a shearing edge and a gauging surface engageable with a side of the wire spring for locating it relative to the shearing edge. A contact tape is fed so that a leading end portion thereof projects beyond the shearing edge transversely of the wire spring. The leading end portion of the contact tape and the wire spring then are welded to one another so that the contact tape extends across the wire spring a preselected distance relative to a side of the wire spring. The welded contact tape and the wire spring next are moved relative to the first shearing member to bring the side of the wire spring against the gauging surface of the first shearing member. A second shearing member then cooperates with the shearing edge of the first shearing member to shear off the leading end portion of the contact tape substantially flush with the side of the wire spring, to form a contact thereon.

3,575,571
INDEXING MECHANISM AND PROCESS

Zygmunt Sowa, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

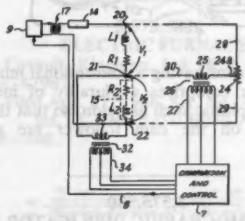
Original application Apr. 12, 1967, Ser. No. 630,276, now abandoned. Divided and this application Apr. 4, 1969, Ser. No. 834,573
Int. Cl. B23q 5/22; B65g 47/00
U.S. Cl. 219—80 13 Claims



This indexing mechanism is used to index a spot welding machine along a track to weld vehicle body components at

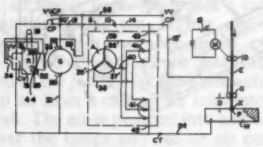
equally spaced places. The mechanism comprises two basic assemblies, a frame carrying the spot welding gun and an indexing carriage carried by and movable relative to the frame. Retraction of a vertical air cylinder attached to the carriage acts through an arm to engage a frame positioning member in linear gear teeth on the track, thereby holding the gun during the welding step. Simultaneously with the welding step a horizontal air cylinder attached to the frame extends to move the indexing carriage along the track a distance equal to the spacing between welds.

3,575,572
WELDING CONTROL
Rodney Walter Levinge, Farnborough, Hampshire, England, assignor to The Solartron Electronic Group Limited, Farnborough, Hampshire, England
Filed July 3, 1969, Ser. No. 838,745
Claims priority, application Great Britain, July 8, 1968, 32573/68
Int. Cl. B23k *11/24*
U.S. Cl. 219—110 **9 Claims**



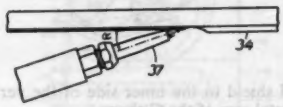
A method and apparatus for resistance welding in which a first voltage is derived including the voltage drop between welding electrodes and from this an output voltage is derived by subtraction of a substantially fixed voltage from the first voltage. Welding current is arrested when the output voltage falls by a predetermined amount.

3,575,573
METHOD OF AND POWER SUPPLY FOR ELECTRIC ARC WELDING
Jon D. McCollister, Mentor, and John E. Carroll, Lyndhurst, Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio
Filed June 20, 1968, Ser. No. 738,478
Int. Cl. B23k *9/10*
U.S. Cl. 219—135 **20 Claims**



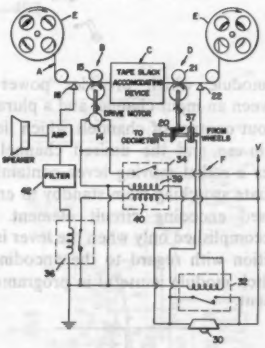
Electric arc power supply for automatic arc welding of the drop transfer type with a small diameter electrode comprising a principal and supplementary DC power source in parallel wherein the principal power source has a short circuit rate of current rise less than 60,000 amperes per second and the supplementary power supply has a short circuit rate of current rise greater than 60,000 amperes per second. The principal source supplies current at all times. The supplementary source furnishes no or low current during arcing but when the drop contacts the weld pool and short circuits the power supply, the supplementary source supplies a brief pulse of current sufficient to very rapidly break the short circuit and reestablish the arc.

3,575,574
METHOD OF BACKING STRIP REMOVAL
Goran Folke Almqvist, Gothenburg, Sweden, assignor to Elektriska Svetsningsaktiebolaget, Goteborg, Sweden
Filed July 7, 1969, Ser. No. 839,242
Claims priority, application Sweden, July 11, 1968, 9536/68
Int. Cl. B23k *9/00*
U.S. Cl. 219—137 **3 Claims**



A method of making a butt weld between sheet steel members having a thickness of 0.2 in. or more, comprising the steps of welding the sheet steel members from one side only by the consumable-electrode arc welding process with the aid of a backing strip of steel which is welded on to but not fused through the welding operation, said backing strip having a thickness not less than 0.08 in., and subsequently removing the steel backing strip by a flame machining operation.

3,575,575
TAPE AND TAPE TRANSPORT PROVIDING DISTANCE SYNCHRONIZED MESSAGES
David W. Kean, 19687 Gary Ave., Sunnyvale, Calif. 94086
Filed Jan. 6, 1969, Ser. No. 789,223
Int. Cl. G11b *15/28, 15/46, 31/00*
U.S. Cl. 179—100.1 **6 Claims**

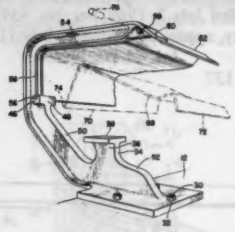


A vehicle-mounted tape transport adapted to play a single tape having sequential messages, each message beginning at preselected points along a designated route of vehicle travel.

3,575,576
POWER RAIL SUPPORT AND SHIELD
Johan L. Harmsen, 68 Hawkridge Avenue, Markham, Ontario, Canada
Filed Apr. 1, 1969, Ser. No. 812,098
Int. Cl. B60m *1/30*
U.S. Cl. 191—32 **4 Claims**

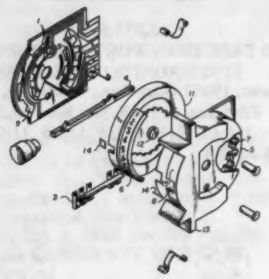
A support for supporting a power rail and a rail shield consisting of a generally C-shaped unitary member having a base

portion adapted for securing said member to a railway crosstie or the like and means for detachably securing a generally



L-shaped rail shield to the inner side of the vertical leg and upper horizontal arm of the C-shape.

3,575,577
SWITCH MODULE
Jeffrey Butler Cunnane, Yonkers, N.Y., assignor to Lunar Electronics, Inc., New York, N.Y.
Filed Sept. 15, 1969, Ser. No. 857,913
Int. Cl. H01h *19/58, 21/78*
U.S. Cl. 200—11 **8 Claims**

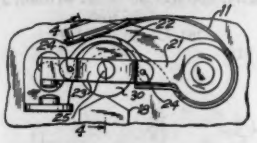


A switch module which provides power-on selective switching between an input channel and a plurality of output channels without contact of channels which lie in sequence between the in-use and the desired channel. The switch module utilizes a radial moving lever containing a contact strip to effectuate switching from standby to encoding mode on an enclosed encoding circuit element. Interchannel switching is accomplished only when the lever is in the standby mode position with regard to the encoding circuit element. The switch module is useful in programming of automated equipment.

3,575,578
IGNITION DISTRIBUTOR WITH IMPROVED CAM TIMING MEANS
Roger Habert, Paris, France, assignor to Ducellier et Cie, Paris, France
Filed June 6, 1969, Ser. No. 831,084
Claims priority, application France, June 18, 1968, P.V. 155438
Int. Cl. H01h *19/00, 19/62*
U.S. Cl. 200—19R **4 Claims**

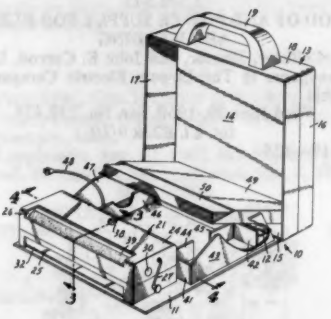
Three sets of breaker points are used in an ignition distributor, two of which are in parallel with each other and the third of which is in series. The parallel pair is operated so that the dwell of the two sets overlap while the third set of points has a dwell time between successive operations of the parallel pair. The time of operation of the third set of points may be chosen to produce an irregular pattern of ignition sparks.

3,575,579
IMPROVED CAM FOLLOWER ROLLER STRUCTURE FOR DISTRIBUTOR CONTACT BREAKER ARM
Patrick J. McGannon, 2797 Steven St., Oceanside, N.Y. 11572
Continuation-in-part of application Ser. No. 616,910, Feb. 17, 1971, now abandoned. This application Dec. 10, 1969, Ser. No. 883,894
Int. Cl. H01h *3/00, 19/62*
U.S. Cl. 200—19 **2 Claims**



Ignition point means having a conventional multilobe cam. The cam follower comprises a plurality of independently rotatable discs of plastic such as nylon, so that the effects of nicks and wear on the cam follower are substantially eliminated.

3,575,580
PORTABLE THEMOGRAPHIC DUPLICATOR MOUNTED IN A CARRYING CASE HAVING HINGED HOUSING PORTIONS
Glenn R. Anderson, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 29, 1970, Ser. No. 6,652
Int. Cl. H05b *1/00;* **G03b** *41/00*
U.S. Cl. 219—216 **3 Claims**

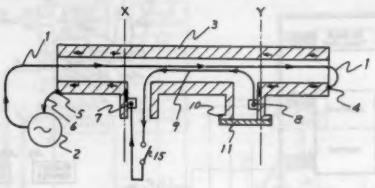


A portable duplicator in an attache case includes a heating station for subjecting copy-sheet and master to uniform heating, and a container tiltable for easy access to a supply of copying materials.

3,575,581
HEAT-GENERATING PIPE UTILIZING SKIN EFFECT CURRENT CONTROLLED LOCALLY IN HEAT GENERATION BY SHORT-CIRCUITING BRIDGES
Masao Ando, Yokohamashi, Japan, assignor to Chisso Corporation, Osaka, Japan
Filed May 15, 1969, Ser. No. 824,975
Int. Cl. H05b *5/08*
U.S. Cl. 219—301 **2 Claims**

In a heat-generating pipe comprising a highly ferromagnetic pipe and an insulated conductor line inserted therein

and having such a connection that AC flowing through the insulated conductor line is equal in intensity and opposite in direction to the AC flowing concentratedly through the inner wall portion of the pipe due to the skin effect of AC, the heat-generating pipe is characterized in that a certain section

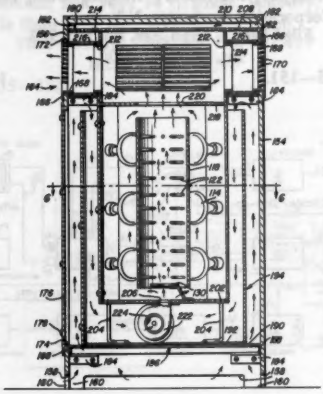


of the inner surface of the pipe is brought to short circuit state by a conductor line optionally including a thermostatic or other switch and having an impedance which is selected according to the requirement for decreasing or elimination of heat generation in said section, to control the heat generated in said section.

3,575,582
ELECTRIC FURNACE

Darrell W. Covault, Kingman, Ind. (R.R. #1, Box 3 Veedersburg, Ind. 47987)

Filed Aug. 27, 1968, Ser. No. 755,604
Int. Cl. F24h *3/04;* **H05b** *1/00*
U.S. Cl. 219—368 **3 Claims**



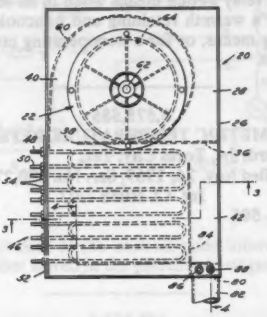
An electric air heater is provided with a cabinet enclosing a heating chamber having top, bottom and sidewalls. The heating chamber houses an open-ended cylindrical heat exchanger positioned so as to absorb heat from a plurality of lamps mounted at the junctures of the sidewalls. A fan is provided to pump air from a cabinet air inlet into an air inlet in the bottom wall. The air is pumped into and around the heat exchanger, over the lamps and out an air outlet in the top wall. The cabinet is kept cool by passing the cool incoming air through a tortuous air flow ducts surrounding the heating chamber before the air flows into the chamber. The heat exchanger is provided with a plurality of inwardly directed ferrous rod members secured to the heat exchanger by a dome-shaped bronze weld.

3,575,583
HOT AIR BLOWER

James A. Brown, Beverly Hills, Mich., assignor to Oakland Metal Fabricators, Inc., Warren, Mich.

Filed Sept. 5, 1968, Ser. No. 757,543
Int. Cl. F24h *3/04;* **H05b** *1/02*
U.S. Cl. 219—370 **5 Claims**

A hot air blower of simple, compact and inexpensive construction wherein the air heating means and blower means are both enclosed within a single housing comprising a spaced apart pair of sheet members having sheet metal wall means extending therebetween to form enclosures for the heater and blower respectively, the blower housing or scroll forming a portion of said wall means enclosing the blower, and both the heater and the blower being supported between the sheets on removable panels permitting easy access and

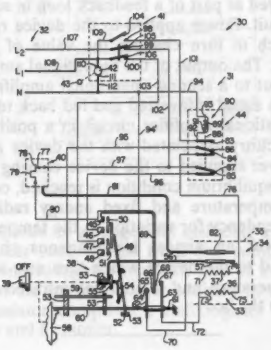


replacement of parts. The construction and arrangement of the heater and blower within the space defined by the sheet-like members insures a uniform air flow around the heaters preventing "hot spots," and control means are provided operable to maintain a constant hot air temperature at the outlet of the unit, together with safety devices for preventing overheating.

3,575,584
CONTROL SYSTEM AND UNIT FOR A COOKING APPARATUS AND THE LIKE

Carl J. Goodhouse, Litchfield, and Paul T. Flumm, Oakville, Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 14, 1969, Ser. No. 866,247
Int. Cl. H05b *1/02*
U.S. Cl. 219—492 **23 Claims**



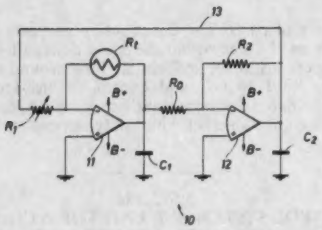
A control unit having a thermostatically operated switch means adapted to interconnect and disconnect an electrical source to and from a heating means of a cooking oven to tend to maintain a selected temperature output when the switch means is moved from an off position thereof to a selected on position thereof, a timer operated switch means and a relay switch means each having first and second positions whereby the relay switch means and the timer operated switch means are adapted when in their first positions thereof to interconnect the source to the heating means through the thermostatically operated switch means. The timer operated switch means is adapted to cause the relay switch means to move to its second position when the timer operated switch

means automatically moves to its second position, the timer operated switch means and the relay switch means being adapted to maintain the relay switch means in its second position even though the timer operated switch means automatically moves back to its first position after the lapse of a selected cooking time period until the thermostatically operated switch means is turned to its off position so that the relay switch means can automatically move back to its first position. The relay switch means when in its second position providing for a warmth retaining and noncooking operation of the heating means, or for a nonoperating condition of the heating means.

3,575,585
RADIOMETRIC TEMPERATURE REFERENCE

Leo G. Monford, Jr., Texas City, Tex.

Filed Nov. 26, 1969, Ser. No. 880,272
Int. Cl. H05b *1/02*
U.S. Cl. 219—505 8 Claims



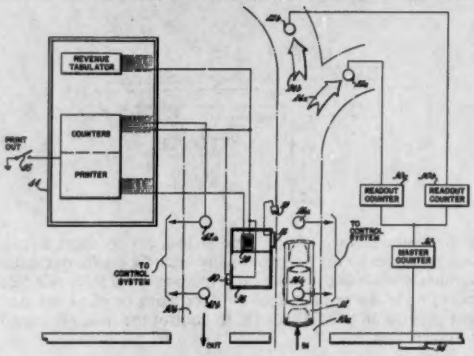
A system or component (device) having an electrical characteristic which varies with changes in its own temperature is employed as part of a feedback loop in an operational amplifier circuit. Power applied to the device raises its temperature which in turn changes the value of its electrical characteristic. The output of the operational amplifier circuit forms the input to a second operational amplifier where the polarity of the signal is inverted and fed back to the input of the first operational amplifier circuit in a positive feedback loop. The circuitry associated with the device automatically alters the power supplied to the device causing it to heat or cool until an equilibrium condition is reached, corresponding to a fixed temperature and fixed energy radiation of the device. Any tendency for variation in the temperature of the device produces an almost instantaneous change in the power supplied to the device which thus acts to maintain a constant temperature and a constant infrared energy level radiation from the body.

3,575,586
AUTOMATIC AUDIT SYSTEM FOR PARKING GARAGES

Stanley A. Kroll, 811 E. 22nd St., Brooklyn, N.Y.

Continuation-in-part of application Ser. No. 277,524, May 2, 1963, now abandoned. This application Sept. 7, 1967, Ser. No. 677,816
Int. Cl. G06k *15/00*; G08g *1/00*
U.S. Cl. 235—61.9 24 Claims

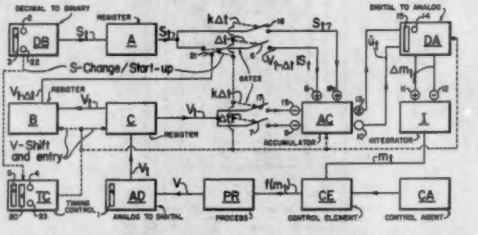
An apparatus for automatically recording car count and revenue data for an exit lane of a parking facility. The recorder prints a record of each tour of duty on the exit lanes, including information on the identification number of the employee, totals before and after the tour, all transactions not following the prescribed procedures, the time, and the data. The recorder can also print each individual transaction if desired. Preset amounts to simplify ticket validation are incorporated in the system.



3,575,587
DIGITAL PROPORTIONAL PLUS RESET PROCESS CONTROLLER

Harry W. Mergler, Middleburg Heights, Ohio, assignor to Sybron Corporation, Rochester, N.Y.

Filed Feb. 7, 1966, Ser. No. 525,505
Int. Cl. G05b *6/00*
U.S. Cl. 235—151.1 14 Claims



A direct digital process controller suitable for control of a single loop. The control algorithm characterizing the controller's action corresponds to the conventional analog proportional plus reset case. However, what corresponds to the proportional effect is exercised by the controller at a greater frequency than what corresponds to the reset effect.

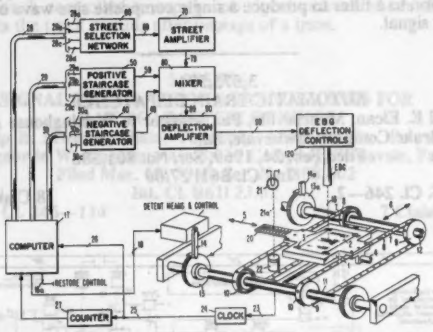
3,575,588
ELECTRON BEAM CIRCUIT PATTERN GENERATOR FOR TRACING MICROCIRCUIT WIRE PATTERNS ON PHOTORESIST OVERLAID SUBSTRATES

Karl Hermann, Vestal; Warren R. Wrenner, Endicott, and Joseph V. Riley, Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 9, 1968, Ser. No. 758,474
Int. Cl. G03b *27/42*; H05k *3/00*
U.S. Cl. 235—151.1 5 Claims

The tracing of microcircuit wire patterns on photoresist overlaid substrates (circuit boards) by means of an electron beam. Pattern tracing is achieved by controlling the deflection of the beam in conjunction with the oscillatory motion of the substrate mounted on an oscillating stage. A feedback system from a grating on the stage provides synchronized

pulses to a clock which in conjunction with the control data



derived from a computer, provides control information for a desired circuit pattern.

3,575,589

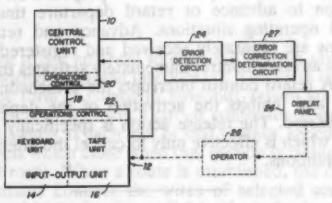
ERROR RECOVERY APPARATUS AND METHOD

Farid J. Neema, and John F. Graham, Sudbury, Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 20, 1968, Ser. No. 777,409

Int. Cl. G06f *11/00*

U.S. Cl. 235—153 **19 Claims**



A method and apparatus for indicating the occurrence of, and procedure for correcting an error in an information processing device, by classifying various types of errors in accordance with various error recovery procedures to be used by an operator to correct such errors, and providing indications of such errors which specify which of a plurality of error recovery procedures is to be used to correct said errors.

3,575,590

CALCULATION BY COUNTING WITH DECIMAL POINT CONTROL APPARATUS

Gerald Offley Crowther, Cheam; George Charles Deli, London, and Aragula Ramachandra Rao, Wallington, England, assignors to U.S. Philips Corporation, New York, N.Y.

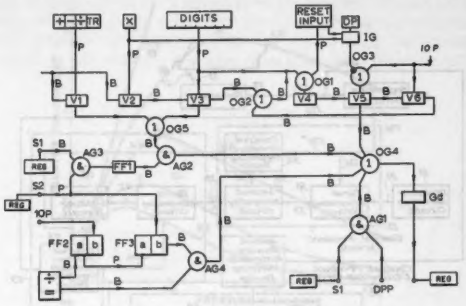
Filed May 29, 1967, Ser. No. 641,846

Claims priority, application Great Britain, May 31, 1966, 24221/66

Int. Cl. G06f *7/48*

U.S. Cl. 235—160 **7 Claims**

A computer having a plurality of number storage registers. Each register includes a plurality of cold-cathode stepping-tube digit storage stages and one further stage for storing the



numerical equivalent of the decimal-point information relating to the number stored in the plurality of stages.

3,575,591

ADDITION CIRCUIT FOR THE DIGITAL CODES GENERATED IN ACCORDANCE WITH A NONLINEAR COMPRESSION LAW

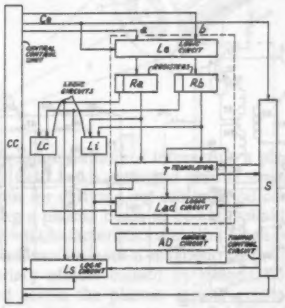
Andre Edouard Joseph Chatelon, Montrouge; Calude Paul Henri Lerouge, Montgeron, and Jean Perrault, Port Marly, France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 27, 1968, Ser. No. 763,234

Claims priority, application France, Oct. 16, 1967, 124561

Int. Cl. G06f *7/50*

U.S. Cl. 235—168 **10 Claims**



There is disclosed an arrangement including a translator to derive two linear code signals from two compressed code signals and compressing the resultant sum of the two linear code signals in the translator after addition in an adder circuit. The translator comprises a shift register operating in two directions and a counter.

3,575,592

ACCELERATION REFERENCE CIRCUIT

William L. Carter Jr., Pittsburgh, and Raymond G. Stein, Jr., Allison Park, Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

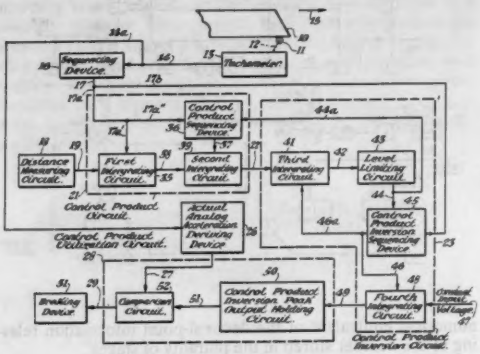
Filed Feb. 4, 1969, Ser. No. 796,517

Int. Cl. G06g *7/18, 7/78*

U.S. Cl. 235—183 **6 Claims**

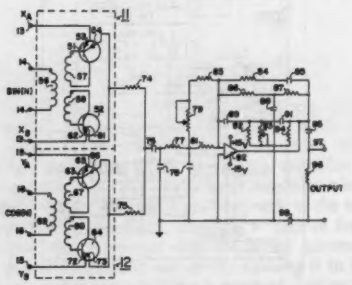
This invention relates to an acceleration reference circuit for producing and utilizing a first parameter analogous and proportional to a control acceleration of a vehicle. This first parameter is compared with a second parameter analogous and proportional to actual vehicle acceleration. The measuring of the vehicle acceleration will occur over a predeter-

mined distance range. The above is achieved through the use of a pulse input indicative of vehicle speed, an analog voltage input indicative of distance remaining to the end point of the



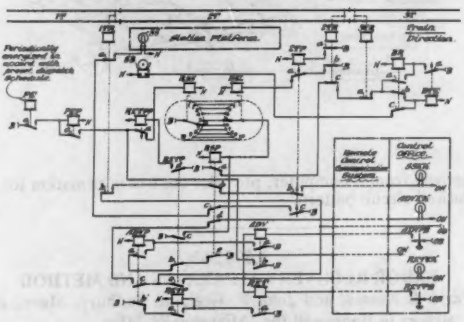
predetermined distance range, and a constant voltage input, all intercorrelated by sequencing devices, integrators, and level detectors.

3,575,593
COMPUTER MODULATOR INCLUDING RECTANGULAR-TO-POLAR COORDINATE TRANSFORMATION
Lynn A. Staples, Greene, N.Y., assignor to Singer-General Precision, Inc., Binghamton, N.Y.
Filed Sept. 18, 1968, Ser. No. 760,546
Int. Cl. G06g 7/22
U.S. Cl. 235—186 **7 Claims**



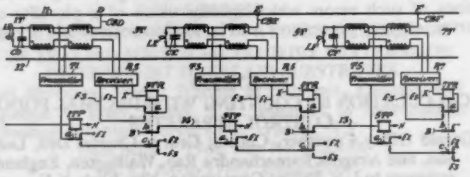
In spite of the increased use of digital computer systems, simple analog computers still have a place in vehicle trainers, particularly the small vehicle trainers. However, the problem has been to reduce the size of the computers and to improve their expected life and maintainability. The computer modulator of this invention comprises an effective device for producing signals representative of polar coordinates. The device comprises a pair of sin-cos modulators each being controlled by a notched rectangular wave and having applied to it electrical potentials which represent the quantities to be used in a calculation. The notched control wave is so mutilated as to reduce its two major harmonics to a very low amplitude so that the filtering required for the final output signal is at a minimum. The control signal is applied to the primary of a transformer having two secondaries. Each secondary is connected across a transistor to control conduction therethrough, and the potential whose amplitude represents the quantity to be used is applied to one of the primary electrodes of the transistor. In this manner conduction through the transistor of the signal representing the quantity is controlled by the control signal. Each secondary controls a separate transistor so that two input signals are alternately connected to an output. The second portion of the modulator duplicates the first but the two control signals applied to the two portions of the modulator are 90° out of phase. This produces sine-cosine outputs which are combined for application to a filter to produce a single composite sine wave output signal.

3,575,594
AUTOMATIC TRAIN DISPATCHER
Joel E. Elcan, Monroeville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Feb. 24, 1969, Ser. No. 801,586
Int. Cl. B61l 27/00
U.S. Cl. 246—2 **8 Claims**



An automatic train dispatcher for directing the departure of railroad trains from a station in accordance with prescheduled departure times. Control apparatus responds to readout from a prerecorded schedule and to train arrivals to normally authorize departures by the schedule. Remote control by the system supervisor is superposed on this normal operation to advance or retard departure times to meet unusual operating situations. Advance and retard control functions are separately received and registered at the station. An advance control immediately activates the departure signal. A retard control interrupts the prescheduled readout control and inhibits the activation of the departure signal until released. The release action is specifically an advance control which is effective only to cancel the interrupt and inhibit conditions.

3,575,595
RAILROAD TRACK CIRCUITS
Rayford C. Pace, Homewood, Ala., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed May 27, 1969, Ser. No. 828,198
Int. Cl. B61l 23/30
U.S. Cl. 246—34 **7 Claims**



A crossbond with a tuned circuit portion, matching the impedance of the rail circuit, is connected across the rails at each location between adjoining noninsulated track sections. A track circuit transmitter is so connected to each crossbond that its output divides equally between the tuned circuit and rail circuit paths. A hybrid coil arrangement couples a track

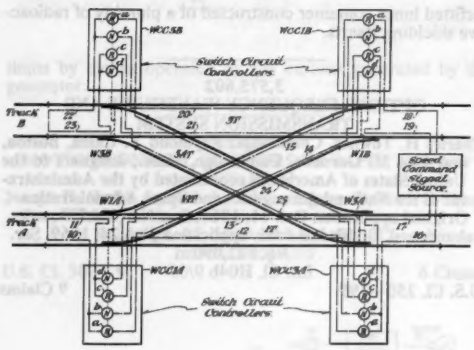
circuit receiver to each crossbond, the coupling being so balanced between tuned and rail circuit paths that each receiver is responsive only to received rail current and not to output of collocated transmitter. All transmitters have a common output frequency for train detection, with each being approach controlled to supply cab signal current which also resets the track circuits after passage of a train.

3,575,596

SIGNAL TRANSMISSION ARRANGEMENTS FOR RAILROAD INTERLOCKINGS

Philip R. Schatzel, Shaler Township, Allegheny Co., Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Mar. 19, 1969, Ser. No. 808,602
Int. Cl. B61l 23/32
U.S. Cl. 246—114 **7 Claims**



A single wire is laid adjacent to each rail in each separate track section within a railroad interlocking. The wires in each section do not form a complete loop but rather are connected to contacts of the switch circuit controller associated with the track switch at each end of that section, specifically to those contacts which close when that section is included in an established route. When a route is established, the circuit controller contacts connect the wires of selected sections into a completed loop circuit parallel to the rails along that route. This loop circuit is supplied with speed command signals to which train carried speed control apparatus responds in the same manner as to signals transmitted conventionally through the rails.

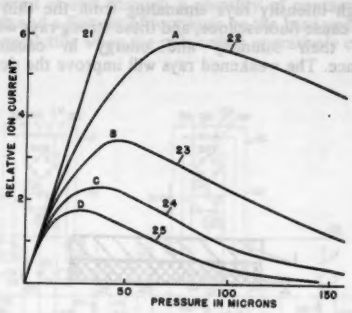
3,575,597

A MULTICHANNEL PHOTOIONIZATION CHAMBER FOR ABSORPTION ANALYSIS

Hongsuk H. Kim, Bedford, and Shardanand, Cambridge, Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Apr. 1, 1969, Ser. No. 811,892
Int. Cl. G01t 1/18
U.S. Cl. 250—43.5 **10 Claims**

A multichannel photoionization chamber is disclosed for measuring absorption, photoionization yield and photoionization coefficients of gases. The chamber includes a plurality of ion collection plates which permit measurement of ion current ratios to determine whether the absorption cross section is independent of both pressure and path length; i.e., Beer's law is obeyed. Also disclosed are a plurality of pressure gauges for measuring chamber pressure at locations adjacent each of the collector plates. The pressure values corresponding to ion current maxima for each collector plate are used to determine the absorption cross section of the filling gas.



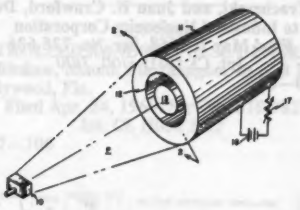
Identical values of cross section calculated in this way are another indication that Beer's law is obeyed.

3,575,598

PLASMA SIMULATION AND ANALYSIS APPARATUS AND METHOD

William Bernstein, Los Angeles; John Michael Sellen, Jr., Encino, and Howard S. Ogawa, Los Angeles, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Feb. 21, 1968, Ser. No. 707,054
Int. Cl. H01j 1/50, 37/26; H05h 1/00
U.S. Cl. 250—49.5 **6 Claims**



There is disclosed a method of interacting a plasma beam with a magnetic field and a preferred plasma simulation and analysis apparatus for carrying out said method comprising a source permitting a plasma beam to be controllably synthesized to have known characteristics and which can be directed to a region of interaction with a magnetic field. In order to eliminate boundary effects caused by polarization electric fields developed across the plasma density gradients at the plasma stream boundaries, the magnetic field is generated in a radial geometry. It is found that above a critical value of magnetic field, the electrons in the plasma beam are driven in annular orbit in the radial magnetic field and do not penetrate the field, whereas the positive ions traverse the field and impact on an electrostatic collector. The apparatus is such as to act as an electron deflector and to thus afford the possibility of generating a type of plasma behavior hitherto unavailable for observation and is also such as to be useful for simulating outer space ionosphere phenomena and conditions and for the creation of plasma stream phenomena for purposes of analytical study with a view to fusion techniques and the like.

3,575,599

RADIOGRAPHIC EXPOSURE CONTROL SCREEN FOR THE DEFINITION OF DETAIL OF BOTH HARD AND SOFT SUBSTANCE

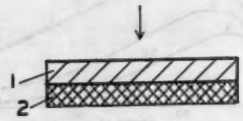
Georg S. Mittelstaedt, 274 73rd St., Brooklyn, N.Y.

Filed Mar. 6, 1969, Ser. No. 804,931
Int. Cl. H01j 1/62
U.S. Cl. 250—80 **2 Claims**

The invention relates to a radiographic exposure control screen. It comprises a fluorescent layer and a visible light

opaque layer, and is characterized in that the fluorescent layer diminishes penetrating rays selectively.

The fluorescent layer has a low response value. Only the varied high intensity rays emanating from the thin object areas will cause fluorescence, and these strong rays will loose some of their intensity and energy in causing the fluorescence. The weakened rays will improve the definition



of detail of thin object areas. It is well known in radiography, that relatively weak rays will define detail of soft substance.

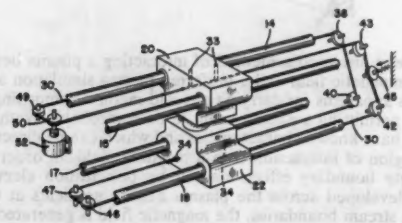
The weak rays emanating from dense object areas are not causing fluorescence, and therefore are not diminished by causing fluorescence, and will define the dense object areas.

It can be seen that detail of both hard and soft substances will be defined in a radiograph.

3,575,600
NUCLEONIC GAUGES WITH TRAVERSING HEADS, AND DRIVE THEREFOR

George J. Trachevski, and Juan H. Crawford, Dublin, Ohio, assignors to Industrial Nucleonics Corporation

Filed May 1, 1968, Ser. No. 725,636
Int. Cl. G01f *1/00, 7/00*
U.S. Cl. 250—83 4 Claims



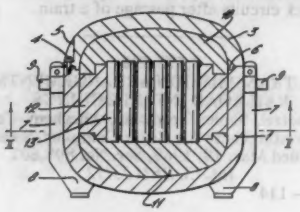
An enclosed O-bracket type traversing system for nucleonic or radioactive gauging apparatus includes a flexible tension member interconnected with the source and detector heads to form an endless loop for accurate maintenance of registration and alignment throughout the range of traversing movement.

3,575,601
TRANSPORT CONTAINERS FOR RADIOACTIVE MATERIALS

Graham Eades Lindsay, Harwell, Didcot, and Leslie Samuel Evans, Upper Basildon, Reading, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Apr. 11, 1969, Ser. No. 817,263
Int. Cl. G21f *1/00*
U.S. Cl. 250—108 4 Claims

A container for the transportation of radioactive material, specifically, irradiated fuel elements. The transport container consists of an outer shock resistant steel container and an in-

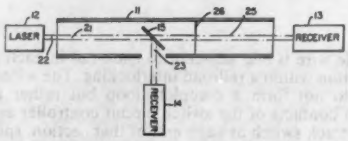


terfitted inner container constructed of a plurality of radioactive shielding inserts.

3,575,602
OPTICAL FREQUENCY WAVEGUIDE AND TRANSMISSION SYSTEM

Charles H. Townes, Cambridge; Raymond Y. Chiao, Boston, and Elsa M. Garmire, Cambridge, Mass., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Original application Oct. 11, 1965, Ser. No. 494,739, now abandoned. Divided and this application Jan. 24, 1969, Ser. No. 822,090
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 9 Claims



An optical communication system is disclosed in which electromagnetic energy is communicated from a source to a receiver through a gastight structure filled with gas, such as carbon dioxide, at a selected pressure. The energy is of a first frequency and with a critical power value P_c so that the energy which passes through the gas in trapped in the form of a constant diameter beam. The energy also includes modulated electromagnetic energy at a critical power value less that P_c, but at a frequency higher than the first frequency, whereby the modulated energy is also trapped in the beam as it passes through the gas-filled structure.

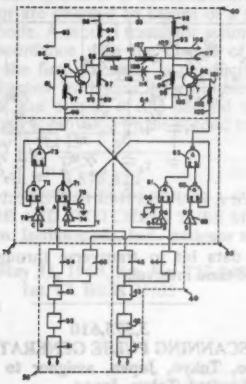
3,575,603
TIME ERROR CONTROL FOR GENERATOR FREQUENCY GOVERNOR

David W. Schlicher, Minneapolis, Minn., assignor to Electric Machinery Mfg. Company, Minneapolis, Minn.

Filed Mar. 12, 1970, Ser. No. 18,864
Int. Cl. H02p *9/04*
U.S. Cl. 290—40 8 Claims

A time error control operated continuously in conjunction with the frequency control of a power-driven alternating current generator to momentarily modify the performance of the frequency control to reduce the time error caused by variations in frequency between the system and standard, thus giv-

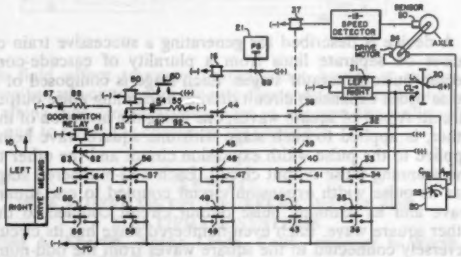
ing accurate time at all times and within extremely close limits by clocks operated by the current generated by the generator.



3,575,604
MOTION CONTROL ON DOORS OF RAPID TRANSIT CARS

Joseph H. Smith, Lynbrook, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed Sept. 17, 1969, Ser. No. 858,677
Int. Cl. H02j *1/00*
U.S. Cl. 307—9 **6 Claims**



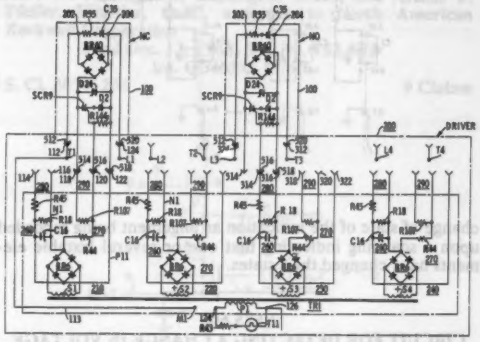
A vehicle door control system is provided for a rapid transit car. The door is actuated by a drive means in response to commands issued by a designating means. The motion of the vehicle is regulated by a power controller. The improved system includes vehicle function means for monitoring the various operational parameters of the vehicle and checking means responsive to the vehicle function means, the designating means and the power controller. The check means determines that the door of the car can be safely opened.

3,575,605
STATIC CONTROL RELAY

John P. Conner, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 15, 1970, Ser. No. 3,179
Int. Cl. H02j *3/00*
U.S. Cl. 307—29 **12 Claims**

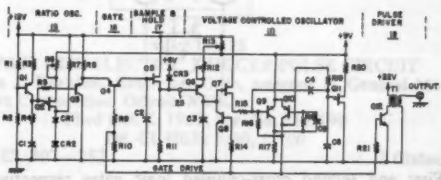
A static control relay comprising a base unit adapted to removably receive a plurality of pole units each including a semiconductor switching means actuable between substantially nonconducting and conducting conditions or states. The base unit includes first and second control circuits corresponding to each associated pole unit and is adapted to selectively receive and operatively connect each pole unit to one of said control circuits. The semiconductor switching means of each pole unit is normally substantially nonconducting when the pole unit is operatively connected to the first control circuit through a plurality of contacts on said pole unit and a first set of terminals on the base unit and normally conducting when the pole unit is operatively connected to the second control circuit through a plurality of contacts on the pole unit and a second set of terminals on the base unit which are adapted to selectively receive said pole unit. When the base unit is energized, each pole unit associated therewith is actuated from the normal operating condition or state to the opposite operating condition or state.



3,575,606
CONTROLLED RANDOM PULSE GENERATOR

Robert E. Bledsoe, Miami, Fla., assignor to G B Instruments, Inc., Hollywood, Fla.

Filed Apr. 24, 1969, Ser. No. 818,982
Int. Cl. H03k *3/82*
U.S. Cl. 307—106 **6 Claims**



A controlled random pulse generator which includes a variable-frequency voltage-controlled oscillator, a gate circuit for sampling the output signal of a ratio oscillator to produce a random amplitude voltage for controlling the pulse periodicity of the voltage-controlled oscillator. Circuit means are provided for controlling the minimum and maximum periods of the random output pulses.

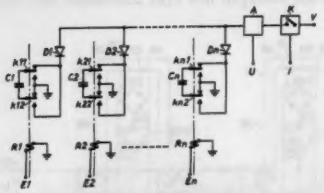
3,575,607
ARRANGEMENT FOR INDICATING CHANGE OF STATE IN ONE OR SEVERAL BISTABLE ELEMENTS

Nils Herbert Edstrom, Vallingby, and Goran Anders Henrik Hemdal, Tyreso, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Apr. 23, 1969, Ser. No. 818,764
Claims priority, application Sweden, May 28, 1968, 7091
Int. Cl. H01h *47/00*
U.S. Cl. 307—125 **3 Claims**

A circuit arrangement for indicating changes of state in one or several bistable elements, e.g. relays in the interval between two successive scannings of the elements. Each bistable element controls two make-and-break contacts, between which a capacitor is connected, a change of state of

the element implying that the polarity of the appertaining capacitor is reversed. This reversing changes the state of an indication arrangement which is subject to the scannings, a

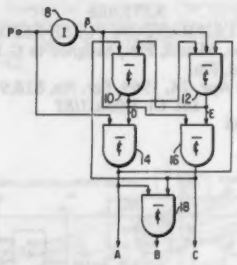


change of state of the indication arrangement being recorded upon a scanning indicating that one or several bistable elements have changed their states.

3,575,608
CIRCUIT FOR DETECTING A CHANGE IN VOLTAGE LEVEL IN EITHER SENSE

Donald John Barth, Bedford, Mass., assignor to RCA Corporation

Filed July 29, 1969, Ser. No. 845,855
Int. Cl. H03k *3/26, 19/34, 19/36*
U.S. Cl. 307—215 **4 Claims**



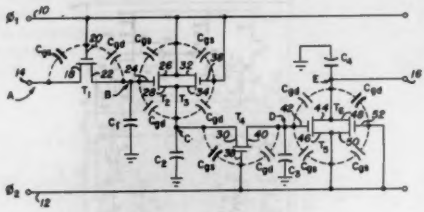
First and second cross-coupled logic gates respectively connected to third and fourth logic gates, with feedback connections from the third to the second and the fourth to the first gate. The input voltage level whose change in value it is desired to sense is applied to the third gate and its complement is applied to the second and fourth gates. When this input voltage changes its value in one sense, an output pulse is produced by the third gate and when it changes its value in the opposite sense, an output pulse is produced by the fourth gate. The logic gates may be NAND or NOR gates.

3,575,609
TWO-PHASE ULTRA-FAST MICROPOWER DYNAMIC SHIFT REGISTER

Hideki Dan Izumi, San Jose, Calif., assignor to National Semiconductor Corp., Santa Clara, Calif.

Filed May 27, 1969, Ser. No. 828,246
Int. Cl. G11c *19/00*
U.S. Cl. 307—221 **10 Claims**

A high-speed integrated circuit shift register cell utilizing six field-effect transistor devices and two clock phase inputs. The six transistor devices include two switching elements, two logic control elements and the respective clock inputs alternate to simultaneously provide a charging path and a ground path for respectively charging and discharging certain PN junction capacitances in the circuit so as to cause an

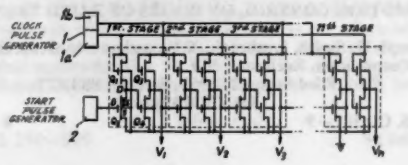


input digital data bit to transverse through the cell in a predetermined time interval.

3,575,610
SCANNING PULSE GENERATOR

Toshio Okubo, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Sept. 9, 1968, Ser. No. 758,507
Claims priority, application Japan, Sept. 20, 1967, 42/60386
Int. Cl. H03k *23/22, 5/00*
U.S. Cl. 307—223 **1 Claim**

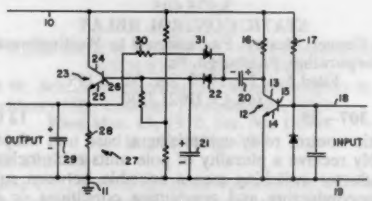


A device is described for generating a successive train of pulses on separate lines from a plurality of cascade-connected pulse generator stages. Each stage is composed of a pulse width expansion circuit driving a scanning pulse output circuit. A pair of square waves, one being the inversion of the other, is applied to each stage with one square wave being applied to the pulse width expansion circuit and the other to the scanning pulse output circuit. Each odd-numbered stage has its pulse width expansion circuit coupled to one square wave and its scanning pulse output circuit coupled to the other square wave. Each even-numbered stage has its circuit reversely connected to the square waves from the odd-numbered stages. Field effect transistors are employed to accomplish the pulse generation, thereby eliminating components such as resistors, capacitors and the like.

3,575,611
FREQUENCY TO DIRECT CURRENT CONVERTER

James R. Reed, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 8, 1969, Ser. No. 848,646
Int. Cl. H03b *3/04*
U.S. Cl. 307—233 **8 Claims**



A first transistor is controlled by an alternating current input signal and is cyclically rendered conductive and non-

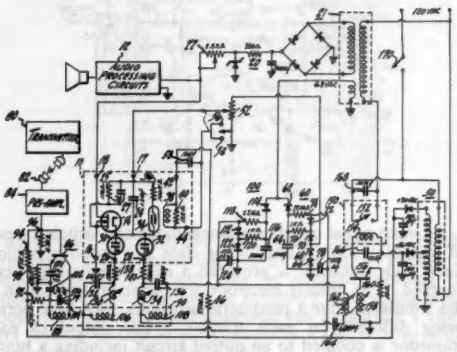
conductive in accordance with the frequency of the input signal. When the first transistor is nonconductive, a first and a second capacitor are charged by means of a series circuit including a first diode. A second transistor assumes a state of conduction in accordance with the charge of the second capacitor. When the first transistor is conductive, the first capacitor is discharged by means of a circuit including a second diode and the output of the second transistor. A direct current output is provided by the second transistor.

3,575,612

FET CONTROL SYSTEM EMPLOYING A STORAGE CAPACITOR AND SWITCHING TUBE MEANS

Lawrence M. Lunn, Indianapolis, Ind., assignor to RCA Corporation

Filed May 31, 1968, Ser. No. 733,548
Int. Cl. H03k 25/02
U.S. Cl. 307—238 10 Claims



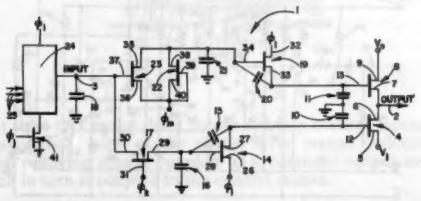
A field effect transistor control unit having a storage capacitor associated with its gate electrode and employing a switching tube circuit arrangement to improve the ability of the unit to retain the charge on the capacitor.

3,575,613

LOW POWER OUTPUT BUFFER CIRCUIT FOR MULTIPHASE SYSTEMS

Michel A. Ebertin, Yorba Linda, Calif., assignor to North American Rockwell Corporation

Filed Mar. 7, 1969, Ser. No. 805,305
Int. Cl. H03k 17/60
U.S. Cl. 307—242 7 Claims



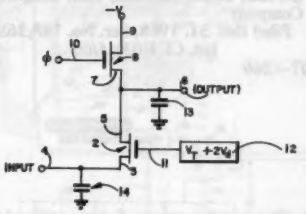
A first switching device is connected between an output terminal and a voltage potential representing a logic one state. A second switching device is connected between the output terminal and a voltage potential representing a logic zero state. The devices are conditionally turned on as a function of the logic state of the potential on an input terminal to the buffer circuit. If the input terminal is set to a logic zero state, one device is turned on to connect the logic zero potential to the output terminal. Similarly, if the input terminal is set to a logic one state, the other device is turned on to connect the logic one potential to the output terminal. The switching devices never connect the voltage potentials to ground. As a result, excessive power dissipation is avoided.

3,575,614

LOW VOLTAGE LEVEL MOS INTERFACE CIRCUIT

Robert W. Polkinghorn, Huntington Beach, and Arthur F. Pfeifer, Whittier, Calif., assignors to North American Rockwell Corporation

Filed Dec. 13, 1968, Ser. No. 783,603
Int. Cl. H03k 17/60
U.S. Cl. 307—251 9 Claims



An input MOS device has its gate electrode connected to a network for biasing the gate slightly in excess of the threshold voltage for the device. The excess bias is not greater than the maximum anticipated interface signal level which appears on the input electrode of the device. A transistor is connected to the other electrode of the device for amplifying current from the device. A second MOS device is connected in series with the transistor and a voltage source.

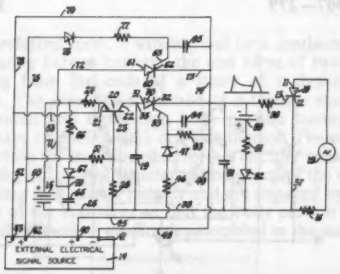
When the input voltage is equal to or less than the excess bias voltage, the input device turns on for driving the transistor and for connecting the output electrode of the second device to ground through the transistor. When the input voltage is more than the excess bias voltage, the input device is turned off and the output electrode is driven to a usable MOS signal level.

3,575,615

FAST RISE ELECTRIC TRIGGER PULSE CIRCUIT

Elgin J. Karklins, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

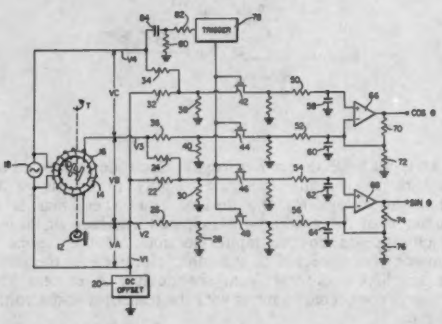
Filed Oct. 2, 1969, Ser. No. 863,190
Int. Cl. H03k 3/00, 17/00
U.S. Cl. 307—252 2 Claims



A fast rise electric trigger pulse circuit for producing a fast rise electric pulse for triggering a silicon controlled rectifier into an electrical load. A capacitor is connected across a source of direct current potential through the emitter-collector electrodes of a normally conducting transistor and across the gate-cathode electrodes of the power silicon controlled rectifier through the anode-cathode electrodes of a switching silicon controlled rectifier. A first externally generated electric signal triggers the switching silicon controlled rectifier

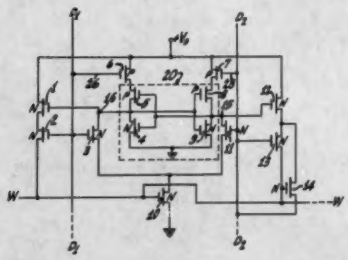
conductive through the anode-cathode electrodes thereof to complete a discharge circuit for the capacitor through the gate-cathode electrodes of the power silicon controlled rectifier to trigger this device conductive through the anode-cathode electrodes thereof. A second later, externally generated electric signal extinguishes the transistor for the duration thereof to interrupt the anode-cathode circuit of the switching silicon controlled rectifier thereby extinguishing this device and resetting the circuit for the next externally generated electric signal.

3,575,616
SIGNAL CONDITIONER
Harley D. Jordan, South Daytona, Fla., assignor to General Electric Company
Filed Dec. 31, 1968, Ser. No. 788,268
Int. Cl. H03k *5/00*
U.S. Cl. 307—260 **3 Claims**



A signal from a synchro-type transducer having rotor angular position information in the second harmonic is applied to a signal conditioning circuit. A resistive summing network is used to add, and difference amplifiers to subtract, components of the currents. The currents are gated to the difference amplifiers at double the fundamental frequency resulting in DC voltage levels proportional to the mechanical orientation of the rotor.

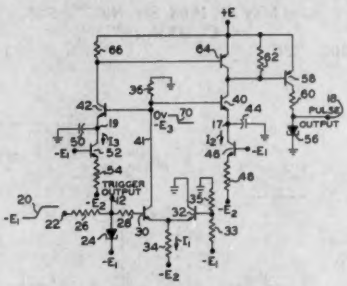
3,575,617
FIELD EFFECT TRANSISTOR, CONTENT ADDRESSED MEMORY CELL
Joseph R. Burns, Trenton, N.J., assignor to RCA Corporation
Filed Dec. 27, 1968, Ser. No. 787,331
Int. Cl. H03k *3/26*
U.S. Cl. 307—279 **10 Claims**



A field-effect transistor flip-flop and three lines coupled through other field effect transistors to the flip-flop for permitting information to be read from and written into the flip-flop nondestructively and for producing, in response to a voltage indicative of a tag bit applied to one of said lines, a signal indicative of a match or mismatch on another of said lines.

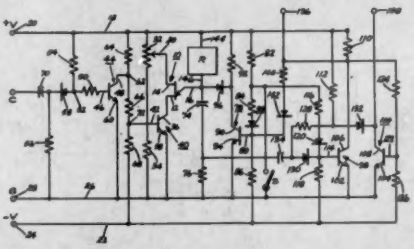
The invention described herein was made in the course of or under a contract or sub-contract thereunder with the Department of the Air Force.

3,575,618
APPARATUS FOR PROVIDING AN ACCURATELY DELAYED OUTPUT PULSE OF ACCURATELY PREDETERMINED DURATION
Frederick Y. Kawabata, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed July 24, 1968, Ser. No. 747,371
Int. Cl. H03k *17/28*
U.S. Cl. 307—293 **20 Claims**



An input signal operates a tunnel diode and switches a pair of transistors from a conducting state to a cutoff condition. Each such transistor is provided a capacitor timing circuit coupled to its emitter electrode for restoring conduction in the transistor after a predetermined time, such time period being different for each transistor. The output of each transistor is coupled to an output circuit including a tunnel diode, and when the first of said transistors returns to conduction, the output tunnel diode is triggered. When the second of the transistors returns to a conducting condition, the output circuit is inhibited whereby the tunnel diode output is concluded.

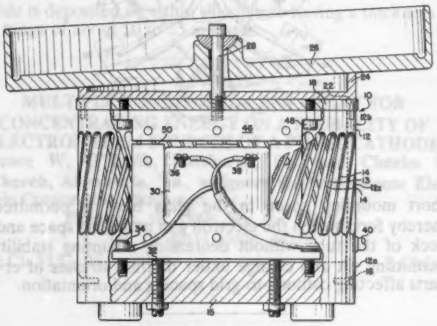
3,575,619
DUAL INPUT ELECTRONIC TIMING CIRCUIT WITH RESISTOR TAP SWITCHING CIRCUIT
Gerald F. Frank, Normal, Ill., assignor to General Electric Company
Filed Sept. 23, 1968, Ser. No. 761,733
Int. Cl. H03k *17/28*
U.S. Cl. 307—293 **4 Claims**



An RC timer circuit which is responsive to dual inputs so as to provide an output at a predetermined time interval after a first input and then only upon the occurrence of a second input. The emitter voltage of a unijunction transistor, conduction of which provides the timer output, is provided by an RC timing circuit in which charging of the capacitor begins upon the occurrence of a first input, and which capacitor provides an emitter voltage sufficient to cause conduction of the unijunction transistor after a predetermined time interval.

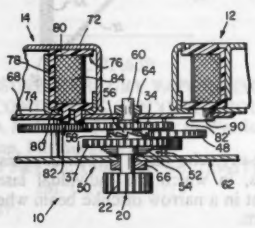
However, an interbase voltage sufficient to permit conduction of the unijunction transistor is supplied only when a transistor connected in series with the first base of the unijunction transistor is caused to conduct upon the occurrence of a second input.

3,575,620
VIBRATORY DRIVE UNIT
Denver Braden, San Diego, Calif., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Mar. 18, 1970, Ser. No. 20,765
Int. Cl. H02k 33/02
U.S. Cl. 310—29 7 Claims



Drive unit for vibratory part feeder utilizes a tubular cylinder as both a protective case for the unit to enclose an electromagnetic coil, and also, by angularly slotting the cylinder completely around its periphery, as a spring which cooperates with the electromagnetic coil to provide a vibratory feeding motion to parts placed in a feeder bowl which may be attached to the drive unit.

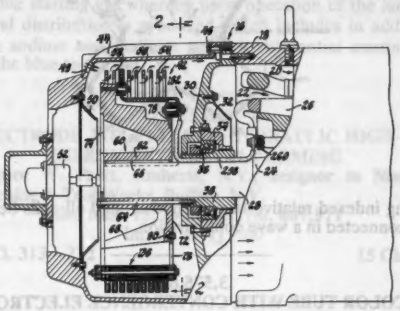
3,575,621
DRIVE MEANS FOR APPLIANCE CONTROL MEANS
Elmo W. Voland; Benjamin F. Chestnut; Peter H. Gerhardt, and Richard E. Pervorse, Indianapolis, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Feb. 28, 1969, Ser. No. 803,213
Int. Cl. H02k 7/20
U.S. Cl. 310—112 12 Claims



At least two motor drive means drives a control means for an appliance, each of the motor drive means including a speed reducing means coupled to a common output means which in turn is coupled to the control means.

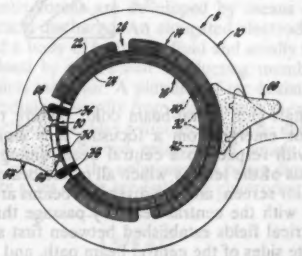
3,575,622
ROTOR RESISTOR ASSEMBLY FOR AC INDUCTION MOTORS
James W. Nielson, Kettering, and Virgil W. Raby, Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 28, 1969, Ser. No. 853,828
Int. Cl. H02k 17/00
U.S. Cl. 310—166 6 Claims

A rotor resistor assembly for a wound rotor induction motor includes resistors formed by metal bars which are wound in circular coils extending circumferentially around the rotor shaft. The resistors are mounted on the rotor shaft by a support member which includes pivotal linkages movably connecting the resistors to the support member. The resistors respectively expand and contract radially when



heated and cooled and a counterweight included in the pivotal linkages maintains radial tension on the coiled bar resistors when the assembly is rotated at high speeds. A fan impeller arrangement extending from the support member circulates cooling air through the resistors.

3,575,623
WINDING END TURN INSULATOR FOR A DYNAMOELECTRIC MACHINE
Bradley K. Stine, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 2, 1970, Ser. No. 7,629
Int. Cl. H02k 3/38
U.S. Cl. 310—260 5 Claims

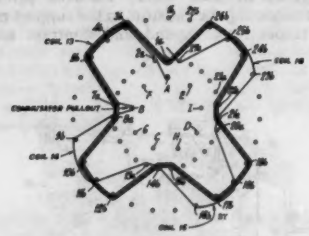


In a preferred form, a winding end turn insulator provides an insulating barrier between the end turns of two windings extending from the ends of a stator of a dynamoelectric machine. The insulator is formed of a flexible sheet insulation material and includes a body portion having integral locking tabs extending from one side thereof. The ends of the body portion are overlapped to form a circular collar capable of covering the inside diameter of one group of the end turns. The locking tabs extend radially and are engaged by an outer diameter of the end turns so that the body portion is held in place while the other winding is assembled to the stator.

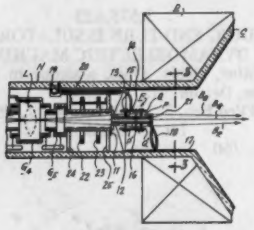
3,575,624
WIRE WOUND DISC ARMATURE
Raymond J. Keogh, Huntington, N.Y., assignor to Photocircuits Corporation, Glen Cove, N.Y.
Continuation of application Ser. No. 620,306, Mar. 3, 1967, now abandoned. This application Nov. 10, 1969, Ser. No. 871,586
Int. Cl. H02k 1/22
U.S. Cl. 310—268 10 Claims

A wire wound motor armature constructed by forming successive groups of single turn armature coils, the coils within

each group being in registry with one another, the groups being indexed relative to one another, and all coils being interconnected in a wave configuration.



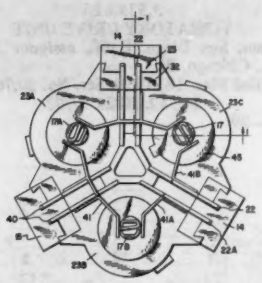
3,575,625
COLOR TUBE WITH CONVERGENCE ELECTRODE MOUNTING AND CONNECTING STRUCTURE
Senri Miyaoka, Kanagawa-ken, Japan, assignor to Sony Corporation, Shinagawa-ku, Tokyo, Japan
Filed Apr. 7, 1969, Ser. No. 813,938
Claims priority, application Japan, Apr. 13, 1968, 43/24621
Int. Cl. H01j *29/56, 29/82, 29/74*
U.S. Cl. 313—78 **5 Claims**



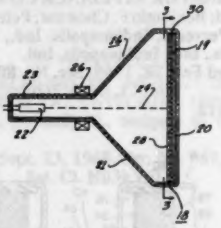
In a single-gun, plural-beam color picture tube in which two beams emerge from a focusing lens along paths that diverge with respect to a central beam emerging along the optical axis of the lens by which all of the beams are focused on the color screen, and the divergent beams are deflected to converge with the central beam by passage through respective electrical fields established between first spaced plates, at opposite sides of the central beam path, and second plates spaced outwardly from the first plates; such plates are disposed closely adjacent to the main deflection yoke by which the beams are made to scan the screen so that the length of the tube can be minimized, and the misconvergence of the beams that would result from a current flow induced in a closed conductive loop that includes the first plates by flux change of the magnetic field of the main deflection yoke is avoided by mounting the first plates in a cantilevered manner at one end and by omitting any conductive connections between the remainder of such plates so that a conductive loop does not exist for the induced current.

3,575,626
ELECTRODE MOUNTING BRACKETS PRODUCING SHORTER ELECTRON GUN MOUNTS IN CATHODE-RAY TUBES
Hurst H. Blumenberg, Owensboro, Ky., assignor to Kentucky Electronics, Inc., Owensboro, Ky.
Filed Sept. 5, 1968, Ser. No. 757,640
Int. Cl. H01j *29/02, 1/88, 19/42*
U.S. Cl. 313—82 **5 Claims**

An electrode holding plate is provided for retaining a cathode sleeve or the like having arms for mounting into a glass bead support member with component members which extend in the glass bead in two directions generally normal to and axially with the electron beam path comprising a bent over substantially L-shaped terminal flange. By establishing the primary bracket dimension normal to the beam, a very short mounting space in the glass bead is permitted to thereby foreshorten the electron gun mounting space and the neck of the tube without decreasing mounting stability or permitting tilt and change under thermal stresses of critical parts affecting cathode-to-grid spacing and orientation.



3,575,627
CATHODE-RAY TUBE WITH SCREEN COMPRISING LASER CRYSTALS
Frederick H. Nicoll, Princeton, N.J., assignor to RCA Corporation
Filed Dec. 29, 1967, Ser. No. 694,666
Int. Cl. H01j *29/32;* **H01s** *3/00*
U.S. Cl. 313—92 **15 Claims**

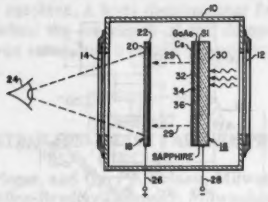


A cathode-ray tube has a screen comprising an array of laser crystals, in which the individual laser crystals emit coherent light in a narrow disclike beam when excited by an electron beam.

3,575,628
TRANSMISSIVE PHOTOCATHODE AND DEVICES UTILIZING THE SAME
James C. Word, IV, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 26, 1968, Ser. No. 779,076
Int. Cl. H01j *39/18, 31/50*
U.S. Cl. 313—95 **9 Claims**

Described are transmissive gallium arsenide photocathodes, and optical devices utilizing the same, comprising gallium arsenide epitaxially deposited on a layer of silicon, the gallium arsenide having absorbed into its surface electropositive metal atoms, preferably cesium. In one embodiment of the invention, the gallium arsenide is deposited on a silicon film epitaxially deposited on a transparent sap-

phire substrate; while in another embodiment, the gallium ar-



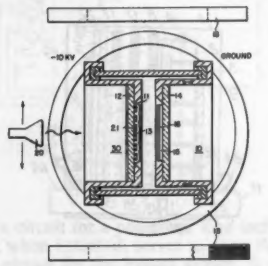
senide is deposited on a thin silicon web having a thickness in the range of about 10 to 25 microns.

3,575,629

MULTIPLE CONDENSING LENS ARRAY FOR CONCENTRATING ENERGY ON A PLURALITY OF ELECTRON BEAM SOURCES OF A PHOTOCATHODE

Terence W. O'Keeffe, Pittsburgh, Pa., and Charles H. Church, Alexandria, Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 18, 1968, Ser. No. 784,763
Int. Cl. H01j *39/06, 39/16*
U.S. Cl. 313—95 **8 Claims**



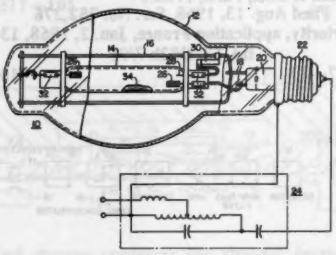
The invention is an array of condensing lense for use in image tube pattern fabricating applications to provide selective and intensive illuminations of individual electron emitting sources of a multiple electron beam photocathode source.

3,575,630

HIGH PRESSURE MERCURY VAPOR DISCHARGE LAMP CONTAINING ZIRCONIUM IODIDE

Charles R. Edris, Nutley, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 15, 1968, Ser. No. 729,179
Int. Cl. H01j *61/18*
U.S. Cl. 313—229 **2 Claims**



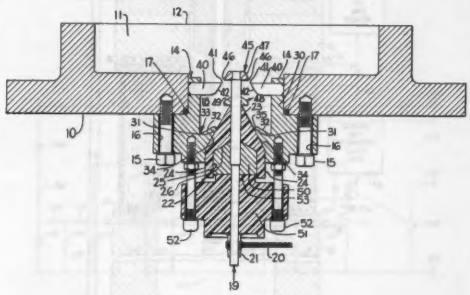
A high pressure mercury vapor (HPMV) discharge lamp of the additive type having a discharge sustaining filling which includes mercury from about 2.0 to 4.0 milligrams per cubic centimeter of arc tube volume, thallium iodide and sodium iodide in a combined amount of from about 1.0 to 2.5 milligrams per cubic centimeter of arc volume, zirconium iodide in an amount of about .03 to 0.3 milligrams per cubic centimeter of arc tube volume and a small quantity of inert ionizable starting gas whereby upon operation of the lamp a spectral distribution is produced which includes in addition to the sodium and thallium peaks a substantial continuum from the blue to the red.

3,575,631

ELECTRODE FOR ELECTRO-HYDRAULIC HIGH-ENERGY-RATE METAL FORMING

Lawrence W. Pratt, Amherst, N.Y., assignor to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed Mar. 15, 1969, Ser. No. 807,571
Int. Cl. H01j *7/00*
U.S. Cl. 313—232 **15 Claims**



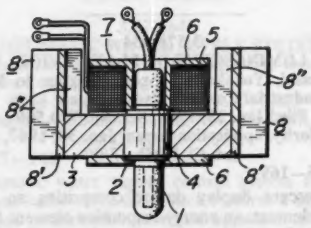
An electrode adapted for use in an electrohydraulic system in which kinetic forces are developed by means of a submerged electrical discharge. An elongated electrode extends axially toward a body of hydraulic fluid and axially through a chamber defined by an annular conducting member and a generally conical insulator. A plurality of arc-initiating members extend radially inwardly from the annular member. The elongated electrode includes a first arc-initiating enlargement and a second, axially-spaced enlargement which acts as a shield for the insulator, the enlargements being disposed axially at opposite sides of the arc-initiating electrodes.

3,575,632

COOLING ARRANGEMENT FOR MAGNETRON

Yoshio Kato, Minoo-shi, and Yasuo Ishida, Hirakata-shi, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Sept. 6, 1968, Ser. No. 757,901
Claims priority, application Japan, Sept. 7, 1967, 42/57759
Int. Cl. H01j *7/26;* H05b *9/06*
U.S. Cl. 315—32 **5 Claims**



A magnetron device composed by improving the medium or large size magnetron device having an output power of the

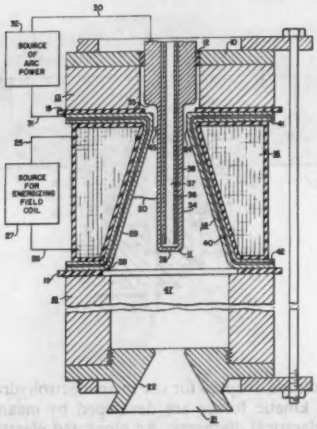
order of 500 watts in ultrahigh frequency, which comprises as cooling means an assembly of a natural air-cooled type radiator formed of aluminum or alloy thereof and which, accordingly, does not necessitate the cooling means like blowers provided to conventional devices. Said device has such advantages that noise is eliminated during operation and that it is light and compact and therefore it is particularly suitable for a domestic-use microwave range.

3,575,633

ARC HEATER HAVING A SPIRALLY ROTATING ARC

Kue H. Yoon, Pittsburgh, and Charles B. Wolf, Irwin, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 1, 1968, Ser. No. 764,090
Int. Cl. H01j *1/50, 7/24;* H05b *1/00*
U.S. Cl. 315—111 **12 Claims**



An arc heater has two radially spaced axially coincident electrodes providing a radially extending arc path. One of the electrodes has an arcing surface tapering in diameter, or frustoconical in shape, whereby the arc path increases in length from the upstream ends of the electrodes to the downstream ends thereof. An arc initiated at the minimum gap, which is at the upstream end, is blasted toward the downstream direction due in part to an azimuthal magnetic field produced by a portion of the current path in the inner electrode which is substantially at a 90° angle with respect to the longitudinal axis of the inner electrode, but the arc is moved downstream primarily by a "Jacob's ladder" effect in which current paths in the electrodes set up magnetic fields which are vectorily added to the magnetic field set up by the arc current in the arc itself, on the upper side only, with a resulting force on the arc which moves it down the electrodes, and the arc path is rotated around the inner electrode by an externally applied direct current axial magnetic field, the combined effects producing a spiral pattern of movement for the arc.

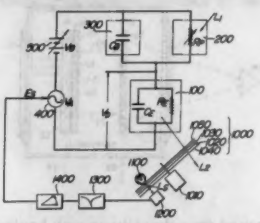
3,575,634

LUMINESCENT DISPLAY DEVICE

Tadao Kohashi, Yokohama, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jan. 25, 1968, Ser. No. 700,508
Claims priority, application Japan, Jan. 30, 1967, 42/6849
Int. Cl. H05b *37/00*
U.S. Cl. 315—169 **6 Claims**

A luminescent display device comprising an electroluminescent element; an energy-responsive element (for example, a photoelectroconductive element) connected in series to said electroluminescent element so that said energy-responsive element controls the bias voltage to said electroluminescent element in response to input energy, thereby controlling the luminescent output from said device; and means



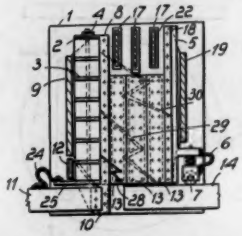
for selectively separating a portion of the wave form of the luminescent output, thereby to increase the sensitivity of said device and to make the luminescent output controllable.

3,575,635

MAGNETIC ARC BLOWOUT DEVICE

Ernesto Maggi, Viale Vittorio Emanuel 69, Bergamo, Italy

Filed Sept. 9, 1968, Ser. No. 758,307
Claims priority, application Italy, Sept. 9, 1967, 20298A/67
Int. Cl. H01h *33/18;* H02h *7/00*
U.S. Cl. 317—11 **10 Claims**



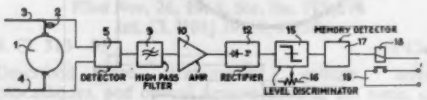
Device for blowing out the arc struck between the contacts of electric switching devices, utilizing magnetic fields for the removal of the arc from the contact gap, and comprising, in combination with the magnetic means, at least one electric resistor, located outside of the extinction chamber proper and in such a manner as to be progressively inserted into the electric circuit that is connected with the contacts, due to the shifting of the related end of the arc length along the resistor(s), while the arc is being removed from the contact gap.

3,575,636

PROTECTING DEVICE FOR ROTATING MACHINES

Michel Edmond Etienne, Nantes, and Fernand F. Nouvion, Fontenay-le-Fleury, France, assignors to Etablissements Brissonneau et Lotz, Paris, France

Filed Aug. 13, 1968, Ser. No. 752,276
Claims priority, application France, Jan. 2, 1968, 134,533
Int. Cl. H02h *7/06*
U.S. Cl. 317—13 **10 Claims**



Device for protecting a rotating electric machine having a collector against short circuits. The device comprises a detector connected to the terminals of the armature or the as-

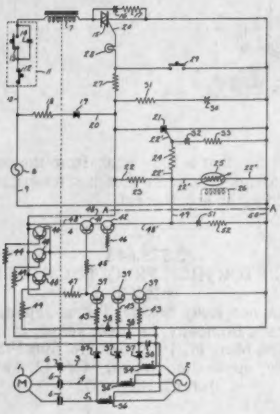
sembly comprising the armature and the auxiliary poles of said machine, a filter for separating the damped electric oscillations from electric disturbances created by the elements of the machine, a level discriminator for producing a logic signal when the frequency of the damped oscillations exceeds a given value, and a circuit controlling the supply of said machine.

3,575,637

GATE-CONTROLLED PHASE FAILURE PROTECTION CIRCUIT

Roland L. Krieger, and Gary J. Drinan, Milwaukee, Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed June 9, 1969, Ser. No. 831,582
Int. Cl. H02h 7/09
U.S. Cl. 317—13 1 Claim



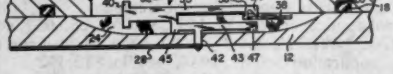
A protective circuit for a polyphase load includes a bypass device which, when actuated, serves to open the load circuit and a trigger circuit for the bypass device. A phase failure-responsive control gate for the trigger circuit includes an exclusive OR gate interposed in the trigger circuit and separate signal transformers, one associated with each of the phases to provide a signal when the associated phase is operative, the transformers serving as inputs to the exclusive OR gate. Because of the exclusive OR gate an actuating signal is provided by the trigger circuit for the bypass device when less than all of the phases are operative but not when none or all of them are operative.

3,575,638

STORAGE CONTAINER FOR ELECTRONIC DEVICES

George L. Filip, Madison, Ala. assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed June 20, 1969, Ser. No. 835,059
Int. Cl. H05k 1/04
U.S. Cl. 317—101 6 Claims



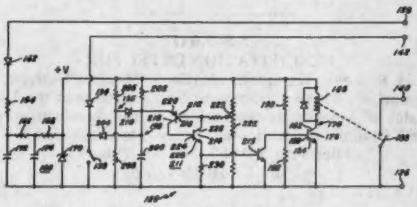
A sealed storage container for channel carriers having miniature electronic components mounted thereon. The container includes a base and a cover, and the base has several groups of three closely spaced slots cut therein; each group of slots receiving a channel carrier. Each slot has a spring conductor mounted therein that includes an elongated member terminating at one end in a point and at the other end in a tab. The spring conductor has a post extending from about the middle thereof that passes through the base and is soldered to one of a number of printed circuit paths on the outside of the base. The printed circuit paths extend to one side of the base member to form a male plug portion that makes it possible to plug the storage container into an instrument and perform electrical tests on the component while the channel carrier is sealed in the storage container.

3,575,639

TIME DELAY CIRCUIT ADAPTED FOR USE IN A POWER CONTROL SYSTEM

Richard F. Shaw, North Attleboro, Mass., and Fred E. Nelson, Cranston, R.I., assignors to Texas Instruments, Incorporated, Dallas, Tex.

Filed Apr. 21, 1969, Ser. No. 817,756
Int. Cl. H01h 47/18
U.S. Cl. 317—141S 6 Claims



The disclosed circuit includes an interconnected resistor capacitor time delay network having a preselected time constant. A pedestal network for establishing a preset voltage across the capacitor is coupled to the time delay network to establish the preset voltage across the capacitor at the initiation of a charging cycle. The capacitor is charged in response to the initiation of a control signal to a preselected voltage level. A voltage sensitive switch means is coupled to the capacitor, and is maintained nonconductive by an adjustable bias network until the preselected voltage level appears across the capacitor whereupon the voltage sensitive switch means is rendered conductive so as to provide a discharge path for the capacitor. The time interval required for charging the capacitor to the preselected voltage level is dependent upon the voltage set by the bias network. A current responsive switch means is coupled to the voltage sensitive means and to the capacitor discharge path in order to provide an output signal in response to the discharge of the capacitor. Control of the conduction of an output switch means coupled to the load is effected by the output signal, thereby controlling the power supplied to the load.

3,575,640

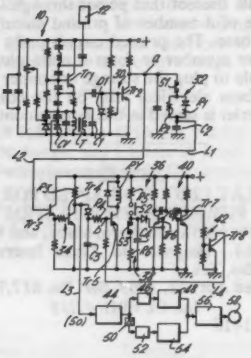
AUTOMATIC WATER SUPPLY SYSTEM

Tadayuki Ishikawa, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Nov. 20, 1968, Ser. No. 777,253
Claims priority, application Japan, Nov. 27, 1967, 42-76312
Int. Cl. H01h 47/12
U.S. Cl. 317—146 8 Claims

An automatic water supply control system for a toilet facility, wash basin or the like which features a capacity-sensitive antenna positioned to sense the approach of a user and cause a valve actuator signal to be produced, coupled with a circuit for compensating for slow changes in antenna capacity caused by changes in ambient conditions, such as humidi-

ty. The system includes timing and delay circuitry which permit the system to allow for minor movements of the user adjacent to the facility and to shut off after a predetermined period of operation.

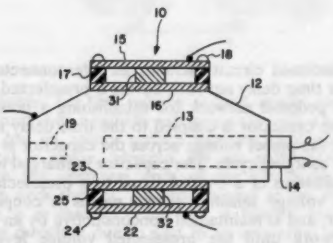


3,575,641

PRECIPITATION DETECTOR

Harold R. Long, Hampton; Martin J. Menges, Seaford, and Samuel W. Mugler, Hampton, Va., assignors to the United States of America as represented by the Administration of the National Aeronautics and Space Administration

Filed Feb. 5, 1969, Ser. No. 796,691
Int. Cl. H01h 47/36
U.S. Cl. 317—153 2 Claims



A precipitation detector and mechanism used to shut down a load during precipitation and activate a load upon completion of precipitation. The detector has thermistors in a bridge circuit. One of the thermistors is exposed to the elements and cooled upon being contacted with precipitation. This causes an imbalance in the bridge circuit the output of which actuates a relay that shuts down the load. Termination of precipitation allows the thermistor to warm up balancing the bridge circuit and the relay closes activating the load.

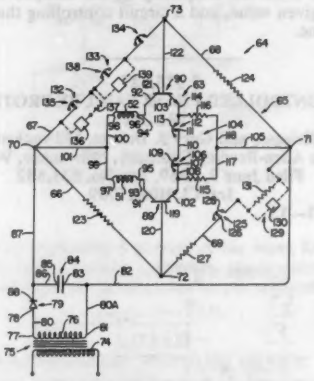
3,575,642

ELECTROPNEUMATIC CONTROL SYSTEM AND CIRCUIT MEANS AND VALVE MEANS THEREFOR OR THE LIKE

Louis M. Puster, Knoxville; Harold G. Brakebill, Concord, and Frank Payne, Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 14, 1969, Ser. No. 815,876
Int. Cl. F16k 31/02; H01h 47/36
U.S. Cl. 317—153 12 Claims

A valve means for interconnecting a pneumatic source to a pneumatically controlled device in relation to a pneumatic condition in a pilot chamber of the valve means that has a leak port controlled by a flapper valve member having an armature portion thereof responsive to the current flow through two electrical coils disposed on opposite sides thereof and respectively forming collector resistors for an electrical amplifier that is fed signals from the output means of an electrical bridge circuit that has temperature-sensing means disposed in the legs thereof.

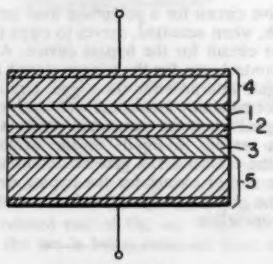


3,575,643

SEMICONDUCTOR HIGH FREQUENCY OSCILLATION DEVICE

Michihisa Suga, and Kenji Sekido, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Mar. 11, 1969, Ser. No. 806,198
Claims priority, application Japan, Mar. 12, 1968, 43/16304
Int. Cl. H01l 9/00
U.S. Cl. 317—234 5 Claims



An improved efficiency semiconductor high frequency oscillator comprises semiconductor regions located between two ohmic electrodes. The impurity concentration is nonuniform throughout the regions, and as herein specifically, described, the impurity concentration may be greatest in an intermediate one of the regions.

3,575,644

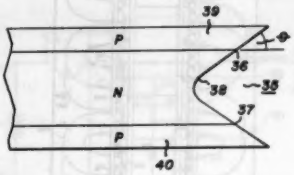
SEMICONDUCTOR DEVICE WITH DOUBLE POSITIVE BEVEL

Gerald C. Huth, Malvern, Pa., and Robert L. Davies, Auburn, N.Y., assignors to General Electric Company

Original application Jan. 30, 1963, Ser. No. 255,037, now Patent No. 3,491,272, dated Jan. 20, 1970. Divided and this application Oct. 31, 1968, Ser. No. 812,492
Int. Cl. H01l 9/00, 9/12
U.S. Cl. 317—234 2 Claims

To improve the reverse voltage breakdown characteristics of a semiconductor body having a junction therein formed by zones of dissimilar resistivities the periphery of the body adjacent the junction is beveled. With a positive bevel (lowest

cross section zone having the highest resistivity) the reverse voltage breakdown characteristics improve progressively as the angle between the junction and the beveled periphery



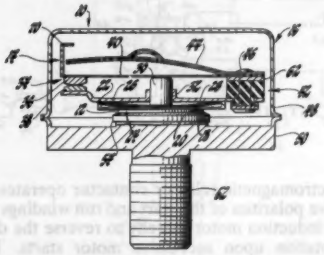
decreases. With two junction bodies having a higher resistivity N or P central zone between P or N zones, respectively, of lower resistivity a positive bevel may be provided at each junction so that a pulleylike concave periphery results with the minimum cross section of the body appearing in the central zone.

3,575,645

POWER ZENER PACKAGE

Kenneth W. Doversberger, Kokomo, and Thomas J. Furnival, Logansport, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed July 17, 1969, Ser. No. 842,516
Int. Cl. H01l *1/12, 1/14*
U.S. Cl. 317—234 **6 Claims**



A self-protective circuit element including a semiconductor device and a switch responsive to the semiconductor device temperature and to current through the semiconductor device in a casing. The switch provides an open circuit in series with the semiconductor device when it senses that the semiconductor device temperature is above a certain level or when current through the semiconductor device exceeds a predetermined level. The casing presents the circuit element as an integral unit and provides a plurality of electrically insulated current paths to the switch and the semiconductor device from outside the casing.

A second embodiment provides a self-protective circuit element having an SCR and a temperature responsive switch in series with the gate terminal of the SCR, the switch being responsive to the SCR temperature within a casing.

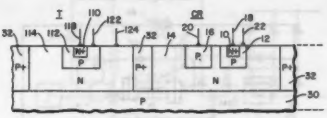
3,575,646

INTEGRATED CIRCUIT STRUCTURES INCLUDING CONTROLLED RECTIFIERS

Edmund A. Karcher, Palm Beach Gardens, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 23, 1966, Ser. No. 581,484
Int. Cl. H01l *1/10*
U.S. Cl. 317—235 **5 Claims**

Integrated circuit structures are provided wherein three of the regions of a four layer device, such as a controlled rectifier, are the same, in conductivity type, resistivity, and impurity concentration gradient, as the emitter, base, and collector regions of a bipolar transistor. The fourth region of the four layer device is provided by a region that may also be the same as a transistor base region entirely laterally spaced in the surface of the integrated circuit. Described are both



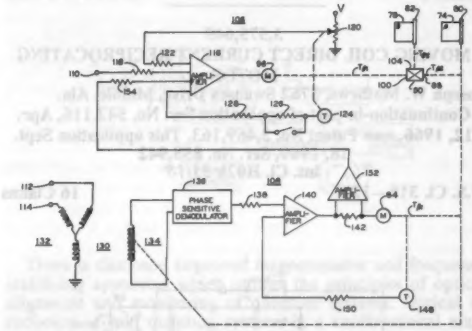
structures with junction isolation and with dielectric isolation as well as methods for forming such structures. Means for avoiding parasitic transistor action in junction isolated structures, where such transistor action would detract from intended circuit operation, are also described.

3,575,647

PLURAL MOTOR SERVO DRIVE SYSTEM INCLUDING MECHANICAL DIFFERENTIAL SUMMATION AND TORQUE COMPENSATION

Kenneth Levy, Binghamton, N.Y., assignor to Singer-General Precision, Inc.

Filed Sept. 5, 1968, Ser. No. 760,113
Int. Cl. H02p *7/68*
U.S. Cl. 318—8 **5 Claims**



The disclosed embodiment of this invention is a servosystem for controlling the rotational position of a pair of anamorphic lenses in a perspective alteration optical system. A first servomechanism is connected to directly drive one of the anamorphic lenses and also to directly drive one input shaft of a differential coupling. A second servomechanism is connected to a second input shaft of the differential coupling. The other anamorphic lens is connected to and driven directly from the output shaft of the differential coupling. A signal proportional to the torque produced by the first servomechanism is supplied to the second servomechanism such that positional errors resulting from the inherent compliance of the second servomechanism are eliminated.

3,575,648

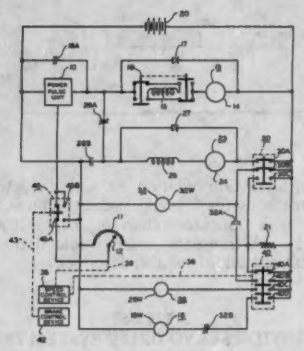
ELECTRIC MOTOR CONTROL SYSTEM

Lewis S. Ridding, Brinklow, Near Rugby, England, assignor to Clark Equipment Company

Filed July 23, 1969, Ser. No. 844,018
Claims priority, application Great Britain, July 26, 1968, 35690/68
Int. Cl. H02p *7/68*
U.S. Cl. 318—106 **12 Claims**

A traction motor and a pump motor of an industrial lift truck are connected to be energized separately or simultane-

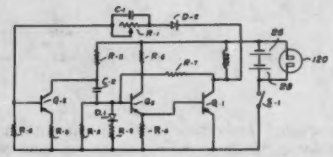
ously from a battery through a pulse modulation switching power unit. At full power requirements for one motor the pulse power switching unit is bypassed and that motor is connected directly to the battery. When both motors are operated simultaneously and at full power requirements, the pump motor operates at full power directly from the battery and the traction motor operates at a selected inching speed.



3,575,649
MOVING COIL DIRECT CURRENT RECIPROCATING MOTOR

Joseph W. Mathews, 3762 Swansea Drive, Mobile, Ala.

Continuation-in-part of application Ser. No. 542,116, Apr. 12, 1966, now Patent No. 3,469,163. This application Sept. 18, 1969, Ser. No. 858,942
Int. Cl. H02k *33/18*
U.S. Cl. 318—127 **16 Claims**



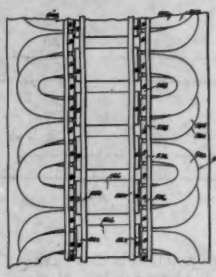
A direct current motor having a coil moving in a magnetic field to provide reciprocating motion and a circuit for controlling the flow of current through the coil, including a transistor connected in series with the coil and a DC source. A capacitor whose state of charge varies as a function of the back e.m.f. generated by the coil is connected for controlling the conductivity state of the transistor as a function of the capacitor's state of charge.

3,575,650
LINEAR HIGH-TORQUE ELECTRIC STEPPING MOTOR SYSTEM

Werner H. Fengler, 23651 Fordson Drive, Dearborn, Mich.

Filed Jan. 8, 1970, Ser. No. 1,439
Int. Cl. H02k *41/02*
U.S. Cl. 310—135 **5 Claims**

This linear high-torque electric stepping motor system includes a linearly movable armature with pole pieces either consisting of permanent magnets or wound double-headed transverse pole pieces registering with and overlapping the heads of pole pieces of alternate opposite polarities in a pair

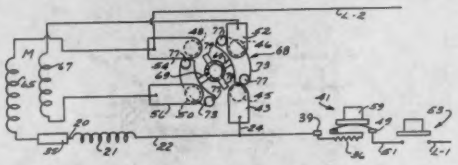


of stators disposed on opposite sides of the linearly-movable armature.

3,575,651
REVERSING MOTOR CONTROL SYSTEM

Daniel R. Pimentel, Seekonk, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 23, 1968, Ser. No. 746,950
Int. Cl. H02p *1/42*
U.S. Cl. 318—207 **16 Claims**



An electromagnetic relay or contactor operates to change the relative polarities of the start and run windings of a reversible AC induction motor thereby to reverse the direction of motor rotation upon successive motor starts. The motor drives a reversibly operable garbage disposal unit or the like. After the motor has started in either direction, its start winding is cut out of circuit and it continues to run on excitation of its run winding in the direction in which it started. The circuitry for connecting the motor to an electrical power source includes a manual-reset current-responsive overload circuit breaker to disconnect the motor upon the occurrence of certain overload conditions such as extended inrush of motor current accompanying locked-rotor conditions. Upon resetting of the thermostatic breaker the motor restarts in reverse. Means is also provided whereby under increased motor currents, such as caused by motor-speed-reducing, dragging overloads, the relay will reexcite the start winding without change of direction of current therethrough, whereby the driving torque of the motor is increased without change in its direction of rotation.

U.S. Pat No. 820,119 indicates the field of one aspect of the invention.

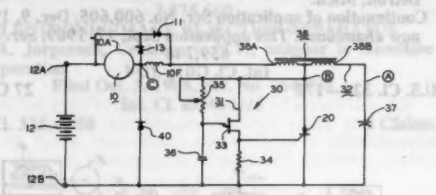
3,575,652
MOTOR CONTROL CIRCUIT WITH SEMICONDUCTOR SWITCHING MEANS AND TRANSFORMER AND CAPACITOR BIASING MEANS

James H. Snyder, Battle Creek, Mich., assignor to Clark Equipment Company,, Buchanan, Mich.

Filed June 30, 1969, Ser. No. 837,435
Int. Cl. H02p *5/16*
U.S. Cl. 318—341 **20 Claims**

An electric motor is connected to a direct current electrical power source through a silicon controlled rectifier that is cyclically turned on by a triggering circuit and turned off by

a commutating circuit. A semiconductor diode is connected in parallel with the silicon controlled rectifier in a reverse biased direction relative to the direct current source. The motor power circuit operates so that the diode is forward



biased during part of the switching cycle by the action of a capacitor and transformer, and then, upon being reverse biased, momentarily carries part of the motor current in its reverse current direction thereby sharing the load current with the silicon controlled rectifier.

3,575,653

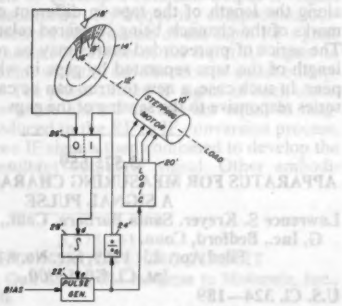
STEPPING MOTOR CONTROL CIRCUIT

Richard T. Gucwa, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 11, 1969, Ser. No. 832,176

Int. Cl. G05b *19/40*

U.S. Cl. 318—685 **5 Claims**



A high resolution stepping motor is controlled by means of a "detented" feedback disc driven by the motor. The motor, which has more detents than the feedback disc, is stepped in closed-loop fashion by a variable frequency pulse generator. The ability of the motor to track its received pulses is employed to control and regulate the frequency of the pulse generator so that the ratio of the time between generator pulses and the time that it takes for the motor to index in response to a given pulse is kept constant.

3,575,654

SERIES CONNECTION OF ALTERNATOR EXCITATION WINDING AND THYRISTOR FOR CONTROLLING THE ALTERNATOR VOLTAGE

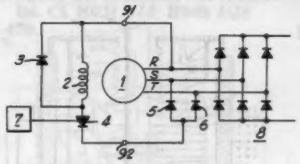
Werner Volkmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation-in-part of application Ser. No. 396,949, Sept. 16, 1964, now abandoned. This application Jan. 16, 1969, Ser. No. 792,905

Int. Cl. H02m *7/20;* **H02p** *9/30*

U.S. Cl. 321—5 **1 Claim**

An excitation winding of a three-phase alternator is connected in series with a thyristor. One end of the series connection is connected to one of the three terminals of the alternator and the other end of the series connection is connected through a pair of diodes to only the other two terminals of the alternator. A zero anode diode is connected across the excitation winding and constitutes a capacitance



effect when no voltage is applied to the winding thus coacting with the inductance of the winding to smooth DC passing through the winding to provide a substantially continuous flow of DC in the winding.

3,575,655

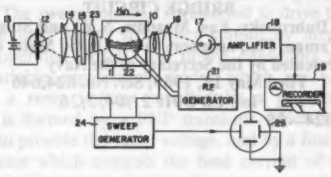
APPARATUS FOR OPTICALLY MONITORING THE GYROMAGNETIC RESONANCE OF QUANTUM SYSTEMS

Hans George Dehmelt, Seattle, Wash., assignor to Varian Associates, Palo Alto, Calif.

Continuation-in-part of application Ser. No. 350,887, Mar. 10, 1964, now abandoned , Continuation of application Ser. No. 649,191, Mar. 28, 1957, now abandoned. This application Oct. 29, 1964, Ser. No. 407,422

Int. Cl. G01n *33/08*

U.S. Cl. 324—0.5 **9 Claims**



There is disclosed improved magnetometer and frequency stabilizing apparatus which utilizes the principles of optical alignment and monitoring of quantum systems. Optical irradiation of said quantum systems in a unidirectional magnetic field effects alignment which alignment may then be monitored by detecting the nonabsorbed pumping radiation. Realignment of the quantum system by application of a radio frequency magnetic field results in changes in the detected nonabsorbed radiation which changes may be used to control either the frequency of the radio frequency magnetic field or the intensity of said unidirectional magnetic field to maintain said quantum systems at resonance. Quantum systems of the type disclosed include the alkali atoms, such as potassium, rubidium, sodium and cesium which are quantum systems exhibiting nonvanishing total angular momentum.

3,575,656

METHOD AND APPARATUS FOR MEASURING PRESSURE IN VACUUM INTERRUPTERS

Ward W. Watrous, Jr., Geneva, Ill., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 30, 1968, Ser. No. 756,603

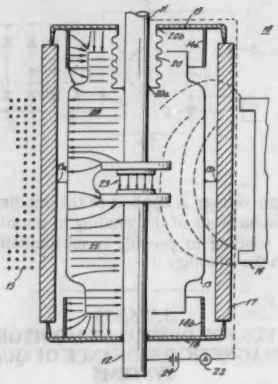
Int. Cl. G01n *27/62*

U.S. Cl. 324—33 **9 Claims**

Method and apparatus for measuring pressure in vacuum interrupters in which electrical connection to the metallic shield provided within the interrupter is not available.

Transverse electrostatic and electromagnetic fields are generated within the interior of the vacuum interrupter so as to cause stray electrons within the interior space of the vacuum interrupter to travel in cycloidal or elliptical paths. The tortuous route assumed by the electrons greatly

enhances the propability of an ionizing collision The pressure measurements are taken by measuring the number of positive ions collected at the negative electrode and comparing the measurement to a calibration chart on which pressure versus



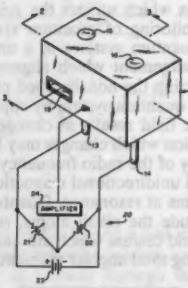
current has been plotted. The measurements may be taken by measuring the time required to charge a capacitor whose charging rate is determined by the vacuum interrupter resistance which is the unknown quantity being measured.

3,575,657

MICROWAVE DETECTOR MOUNT AND POWER BRIDGE CIRCUIT

Leonard Dubrowsky, East Meadow, N.Y., and Stuart S. Horwitz, Tampa, Fla., assignors to the United States of America as represented by the Secretary of the Navy

Filed May 14, 1969, Ser. No. 824,646
Int. Cl. G01r *21/04, 5/26*
U.S. Cl. 324—95 **2 Claims**



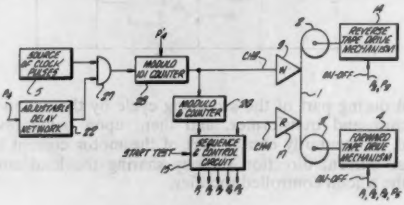
A microwave bolometer mount and an associated temperature compensated power bridge circuit having a pair of matched barretters located in the same metal mass in close thermal proximity to each other. Only one of the bolometer elements is positioned so that it will absorb the microwave energy applied from an external source while the other element is free from any microwave influence. The matched barretters comprise a pair of complementary Wheatstone Bridge arms whereby the fluctuation of the quantity of power measured caused by the ambient temperature changing is essentially canceled out.

3,575,658

METHOD FOR MEASURING INCREMENTAL SPEED OF TAPE TRANSPORT

Michael I. Behr, South Pasadena, and Lewis B. Coon, Jr., Pasadena, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of application Ser. No. 600,605, Dec. 9, 1966, now abandoned. This application Sept. 17, 1969, Ser. No. 859,248
Int. Cl. G01p *3/54*
U.S. Cl. 324—172 **27 Claims**



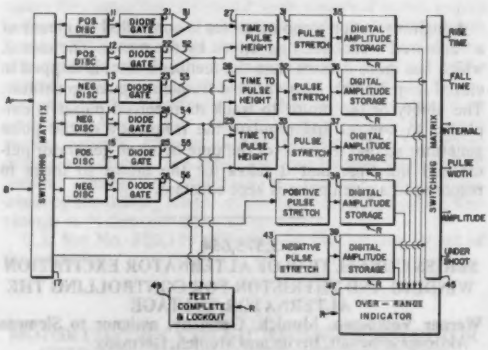
A method for measuring the incremental speed of tape transport is disclosed. A first series of marks are prerecorded along the length of the tape at predetermined increments of space before measuring the speed. Then a second series of marks are recorded along the length of the tape at predetermined increments of time during tape transport. The spatial relationship along the length of tape between the two series of marks is a measure of the speed of tape transport. In one form of the method the first series of marks are recorded along the length of the tape in different channels, with the marks of the channels being staggered relative to each other. The series of prerecorded marks may be repeated along the length of the tape separated by gaps in which no marks appear. In such case, a new test run can be carried out for each series responsive to the sensing of the gaps.

3,575,659

APPARATUS FOR MEASURING CHARACTERISTICS OF A SIGNAL PULSE

Lawrence S. Kreyer, Santa Barbara, Calif., assignor to EG & G, Inc., Bedford, Conn.

Filed Apr. 23, 1969, Ser. No. 818,714
Int. Cl. G04f *9/00*
U.S. Cl. 324—189 **16 Claims**



In the pulse measuring apparatus disclosed herein, a pulse input signal is applied to a plurality of discriminators to provide respective timing signals when the signal amplitude passes respective preselectable levels. Signals having amplitudes which are functions of the intervals between selected ones of these events are then provided by performing time-to-pulse-height conversions in real time. As the means performing these conversions typically cannot provide continu-

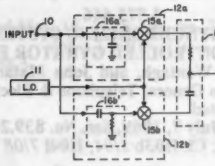
ing or stored signals, a plurality of means are further employed to provide continuing signals representative of the respective intervals.

3,575,660

ELECTRONIC IMAGE REJECTION APPARATUS

Otto A. Jorgensen, Centerport, N.Y., assignor to Hazeltine Corporation

Filed Oct. 3, 1968, Ser. No. 764,798
Int. Cl. H04b 1/18
U.S. Cl. 325—388 **4 Claims**



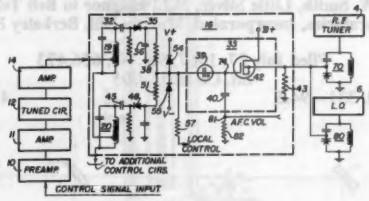
Disclosed is electronic image rejection apparatus which provides relatively uniform image rejection performance over a band of input frequencies and a range of operating temperatures without supplemental frequency or temperature compensation. The apparatus accepts an L.O. signal and an input RF signal containing both desired and image frequency components, and processes the signals in two parallel signal conversion channels to develop a resultant output IF signal which contains substantially only frequency components corresponding to the desired components of the input RF signal. In the parallel channels conversion of the input RF signal to IF takes place together with the introduction of equal but opposite phase shifts. The phase-shifted IF signal in each channel is then further phase shifted an amount equal in magnitude to that introduced in the RF to IF conversion process, and the resulting two IF signals then combined to develop the aforementioned resultant output IF signal. Other embodiments are covered.

3,575,661

REMOTE CONTROL TUNING CIRCUIT

William H. Slavik, Oak Lawn, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 5, 1968, Ser. No. 773,520
Int. Cl. H04b 1/16
U.S. Cl. 325—390 **8 Claims**



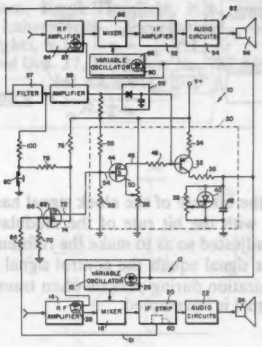
Remote control tuning of a television set is accomplished by providing a desired DC voltage level derived from an input signal at a particular frequency to a capacitor through a neon tube, and the voltage level stored in the capacitor is coupled to a varactor tuner by a field-effect transistor. In order to insure accurate tuning, the output of an automatic frequency control (AFC) circuit is added to the voltage present on the capacitor to modify the voltage level supplied to the field-effect transistor, thereby modifying the tuning voltage of the tuner causing it to pull on to the correct frequency.

3,575,662

ELECTRONIC SEARCH-TUNING SYSTEM

Elden R. Davisson, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed June 21, 1968, Ser. No. 738,957
Int. Cl. H03j 3/18; H04b 1/28
U.S. Cl. 325—470 **17 Claims**



A circuit for use in electronically sweeping the tuning capacitors of a radio receiver through their capacitance range for successively tuning in each station. The sweeping action stops automatically and the value of the tuning capacitors are held constant at each station which is picked up by the radio. The sweep function is restarted to drive the tuner toward the next higher frequency station by means of a manually operated switch. The tuning capacitors comprise voltage variable capacitance diodes which are varied by means of a ramp voltage supplied by a generator. The generator is formed by a PNP transistor which charges a capacitor to provide the ramp voltage, and by a first field effect transistor which controls the base current of the PNP transistor. A silicon controlled rectifier is connected in parallel with the capacitor at the output of the ramp generator to discharge the capacitor after it has reached the peak voltage level required to vary the diode's capacitance. In the case of an FM radio, said first field effect transistor has its gate electrode coupled for bias control by a ratio detector in the IF strip of the FM receiver. The output of the ratio detector causes the ramp voltage to level off, when a station is tuned in, by establishing the currents in the transistors so that the charging current to the ramp generator capacitor ceases, thereby holding constant the voltage to the tuning diode. In the case of an AM radio, the IF frequency developed in the AM receiver is passed through a series circuit formed by a narrow band filter, an amplifier, and a rectifier, to provide a DC voltage which is applied to the base electrode of the PNP ramp generator transistor. The DC voltage at said base electrode becomes more positive as a station is tuned in, and the PNP transistor decreases its conduction so that the ramp function ceases and the output voltage to the tuning diodes remain constant.

3,575,663

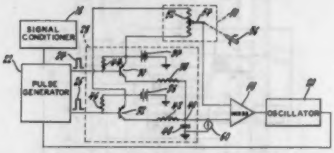
BIT RATE SYNCHRONIZER FOR CLOCK AND PULSE CODE MODULATED SIGNALS

Duane E. McIntosh, Palmyra, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed June 30, 1969, Ser. No. 837,768
Int. Cl. H03k 1/00, 3/04
U.S. Cl. 328—63 **3 Claims**

An apparatus is provided for synchronizing the bit rate of a clock pulse signal with the bit rate of a pulse code modulated signal. The bit rate of the clock signal is regulated by a con-

trol signal so as to synchronize the bit rate of the clock signal with the bit rate of the modulated signal. The control signal is obtained by mixing a reference signal with a variable bias signal. The reference signal represents the difference between the bit rates of the clock signal and the modulated



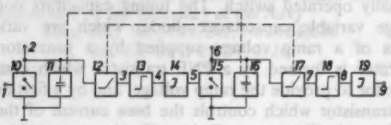
signal. Once the bit rate of the clock signal has been initially synchronized with the bit rate of the modulated signal, the bias signal is adjusted so as to make the reference signal zero. Thus, the bias signal equals the control signal so as to maintain synchronization during periods when transmission of the modulated signal is interrupted.

3,575,664

PULSE WIDTH DISCRIMINATION

Gerhard Kamin, Traisa, near Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed May 9, 1969, Ser. No. 824,393
Claims priority, application Germany, May 11, 1968, P 17 62 267.2
Int. Cl. H03k *5/20*
U.S. Cl. 328—111 **8 Claims**



The charge on a capacitor is increased linearly with time for the duration of an input pulse. The voltage on the capacitor is applied to a threshold circuit which gives an output signal when the voltage on the capacitor exceeds a predetermined threshold value. The circuit thus furnishes no output signal if the input pulse width is less than a predetermined amount. For wider input pulses the output circuit from the threshold circuit is converted to a pulse. The pulse is then extended for the time period previously cut off by the threshold circuit. The resulting output pulse is thus of the same size as the input pulse when the input pulse width is larger than a predetermined value.

ERRATUM

For Class 328—139 see:
Patent No. 3,575,215

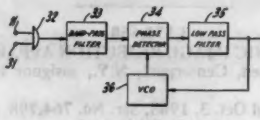
3,575,665

ASYNCHRONOUS DEMODULATION SYSTEM FOR PULSE POSITION MODULATION SIGNAL UTILIZING PHASE OR FREQUENCY MODULATED HIGHER HARMONIC OF A SAMPLING FREQUENCY

Takamichi Honma, Tokyo, Japan, assignor to Nippon Electric Company, Limited,, Tokyo-to, Japan

Filed June 12, 1968, Ser. No. 736,516
Claims priority, application Japan, June 15, 1967, 42/38349
Int. Cl. H03k *9/04*
U.S. Cl. 329—107 **2 Claims**

A system for demodulating pulse-position modulated (PPM) signals derives a phase or frequency-modulated wave from the incoming PPM signals through a band-pass filter having a center frequency substantially equal to an integral multiple of the sampling frequency of the incoming PPM



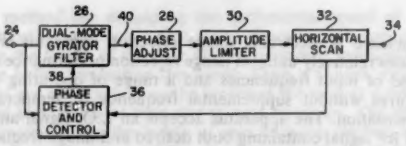
signals. The phase- or frequency-modulated wave is then demodulated.

3,575,666

TELEVISION SYNCHRONIZING SYSTEM USING A PHASE CONTROLLED GYRATOR FILTER

Martin Fischman, Wantagh, and John Matarese, New City, N.Y., assignors to General Telephone & Electronics Laboratories, Incorporated

Filed July 7, 1969, Ser. No. 839,205
Int. Cl. H03b *3/04;* **H04l** *7/08*
U.S. Cl. 331—20 **12 Claims**



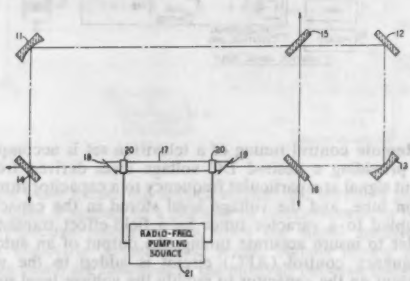
A horizontal synchronizing system for a television receiver. The sync pulses are applied to a tuned circuit consisting of a capacitor and a gyrator-simulated inductor. The resulting signal in the tuned circuit is used to control the derivation of the horizontal sawtooth waveform. The use of a gyrator allows the entire circuit to be fabricated by integrated circuit techniques, and also minimizes the possibility of side locking or spurious synchronization at multiples of 60 Hz. off the horizontal scanning frequency by eliminating the need for the conventional horizontal oscillator. This arrangement results in a phase difference between the sawtooth waveform and the sync pulses, but this phase difference is eliminated by the provision of a phase adjust circuit. A phase detector and control circuit which changes the resonant frequency of the tuned circuit by adjusting one of the gyrator impedances minimizes spurious phase shifting and ensures a stable picture. The gyrator also operates in a second mode to provide a horizontal scan in the absence of sync pulses.

3,575,667

SINGLE MODE RING LASER

Peter W. Smith, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 27, 1967, Ser. No. 656,473
Int. Cl. H01s *3/05*
U.S. Cl. 331—94.5 **4 Claims**



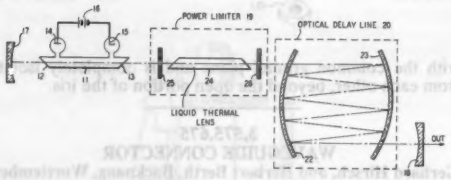
A highly mode-selective ring laser is made with primary and auxiliary ring resonators that are coupled through beam

splitters that direct out of the laser a large portion of radiation in modes that are not resonant in both of the resonators. Typically, the beam splitters will operate on modes propagating in opposite senses. A typical configuration includes primary and auxiliary ring resonators both in the form of quadrilaterals and includes beam splitters with reflectivities chosen to provide a loss for the nonselected modes that is higher than the gain of the laser.

3,575,668
LASER FREQUENCY STANDARD EMPLOYING AN OPTICAL LIMITER

Peter W. Smith, Little Silver, Md., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 18, 1968, Ser. No. 713,923
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **4 Claims**

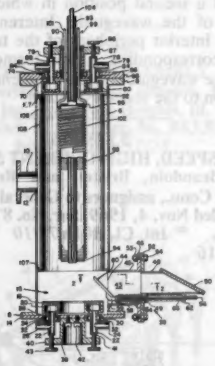


The disclosed laser has, within its resonator, an active medium and an optical limiter adapted to limit at very low levels in order to provide a very narrow effective linewidth at the peak of the atomic gain-versus-frequency curve. The optical resonator is made sufficiently long, for example, by including therein a subsidiary folded resonator, to have a resonance within the narrow effective linewidth. The limiter provides the laser with a self-stabilizing characteristic that minimizes the effects of random fluctuations in the cavity loss or in the gain of the active medium.

3,575,669
CHEMICAL LASER APPARATUS

Andrew V. Haeff, Los Angeles, Calif., assignor to TRW, Inc., Redondo Beach, Calif.

Filed June 17, 1968, Ser. No. 737,722
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **4 Claims**

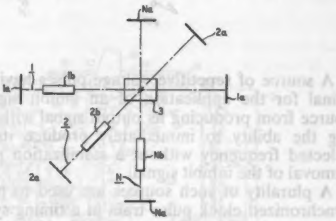


The present invention relates to an apparatus and process for achieving amplification of radiation from an excited, chemically reacting mixture by initiating chemical reaction of the mixture adjacent to an optical cavity and quickly flowing the mixture transversely through the cavity while the radiation interacts with the excited molecules of the mixture. Tuning and focusing of the optical cavity or the reflection chamber is effected by varying the placement and curvature of cavity defining reflectors. Output light energy is removed from the optical cavity by a separate reflector selectively movable into the path of the reflecting radiation.

3,575,670
APPARATUS FOR SYNCHRONOUSLY MODE LOCKING A PLURALITY OF LASERS

John W. Hansen, North Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 27, 1968, Ser. No. 787,367
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **12 Claims**

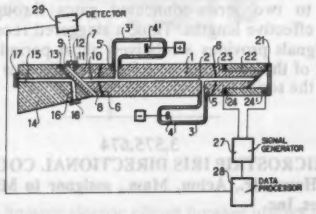


The longitudinal modes of a plurality of lasers are synchronously mode locked by means of an intracavity mode-locking device (e.g., a phase modulator, an acoustically excited mechanism, or a bleachable dye) common to the cavity resonator of each of the lasers, the lengths of each of the resonators being an integral multiple of each other. If, in addition, the resonators are designed such that the longitudinal mode-separation frequency is an integral multiple of the transverse mode separation frequency, both the transverse and longitudinal modes will synchronously and simultaneously phase lock, producing in each resonator a pulse which traverses a zigzag path bouncing back and forth between the resonator reflectors.

3,575,671
HIGH POWER MONOMODE LASER STRUCTURE WITH MULTIPLE COUPLED CAVITIES

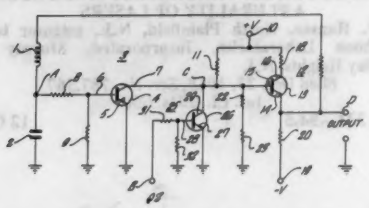
Benjamin Dessus, and Rene Lenfant, Paris, France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Feb. 12, 1969, Ser. No. 798,644
Claims priority, application France, Feb. 12, 1968, 139,558
Int. Cl. H01s *3/08*
U.S. Cl. 331—94.5 **8 Claims**



Single-mode laser energy structure comprising a main cavity and a secondary cavity coupled to the main cavity and formed by a prismatic unit, either disposed in the main cavity containing a laser tube or attached to the laser tube itself.

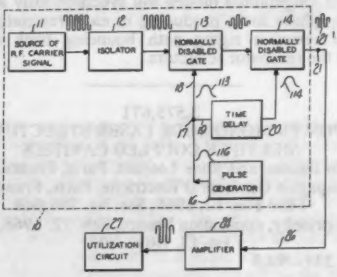
3,575,672
SYNCHRONIZABLE PULSE SOURCE
Frank W. Weber, Duarte, Calif., assignor to Burroughs Corporation, Detroit, Mich.
Filed Aug. 14, 1967, Ser. No. 660,484
Int. Cl. H03b 5/08
U.S. Cl. 331—117 7 Claims



A source of repetitive voltage pulses having an input terminal for the application of an inhibit signal to stop the source from producing its output signal with the source having the ability to immediately produce its output at the selected frequency without a stabilization period upon the removal of the inhibit signal.

A plurality of such sources are used to provide an exact synchronized clock pulse train in a timing system for timing the recovery of data from a magnetic data storage file.

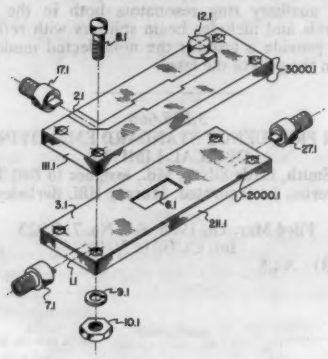
3,575,673
SYSTEMS FOR PULSE MODULATING A SIGNAL
Edward Joseph Biron, Jr., Methuen, and Joseph Ignace Pelc, Andover, Mass., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Nov. 27, 1968, Ser. No. 779,437
Int. Cl. H03k 7/08
U.S. Cl. 332—9 8 Claims



A pulse signal of relatively wide pulse width is split into two similar gating signals. These signals are transmitted in parallel to two series-connected gates through paths of unequal effective lengths. Thus, a staggered reception of the gating signals provides a relatively short period of common enabling of the gates and an RF carrier signal is pulse modulated by the series-connected gates.

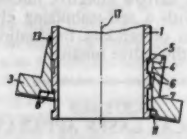
3,575,674
MICROSTRIP IRIS DIRECTIONAL COUPLER
Harlan Howe, Jr., Acton, Mass., assignor to Microwave Associates, Inc.
Filed May 9, 1969, Ser. No. 831,810
Int. Cl. H01p 5/14
U.S. Cl. 333—10 4 Claims

A microwave iris directional coupler on microstrip having high directivity is disclosed. The device is primarily for use in single ground plane microstrip transmission lines of the type commonly used for microwave hybrid integrated circuits. It has an iris between two lines separated by a common ground plane, such that each line forms a separate transmission line



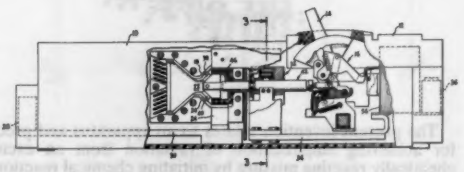
with the common ground plane and is completely isolated from each other, beyond the open portion of the iris.

3,575,675
WAVEGUIDE CONNECTOR
Gerhard Hirsch, and Herbert Berth, Backnang, Wurttemberg, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm Danube, Germany
Filed Sept. 10, 1969, Ser. No. 856,737
Claims priority, application Germany, Oct. 31, 1968, P 18 06 361.1
Int. Cl. H01p 1/04; F16l 23/00; F16b 9/00
U.S. Cl. 333—98 7 Claims



A connector for use with waveguides includes a tubular element having an inner periphery of a shape which allows the element to be placed about one end of a waveguide and which permits tilting movement of the element between a first position in which its axis is concentric with that of the waveguide and a second position in which its axis is at an angle to that of the waveguide. Interengaging means are formed on the interior periphery of the tubular element for locking with corresponding means formed in the exterior periphery of the waveguide when the element is moved from the first position to the second position.

3,575,676
HIGH-SPEED, HIGH-CURRENT SOLENOID
Norman R. Beaudoin, Bristol, and Robert W. Lauben, Farmington, Conn., assignors to General Electric Company
Filed Nov. 4, 1969, Ser. No. 873,968
Int. Cl. H01h 77/10
U.S. Cl. 335—16 12 Claims



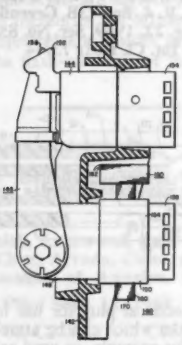
A current-limiting circuit breaker incorporates an improved ultra high-speed solenoid operator for carrying con-

tinuous current loads substantially in excess of 100 amperes without exceeding 80° C. The solenoid operator is comprised of a generally C-shaped nonhelical winding of substantially one full turn having a cross-sectional area controlled to provide a minimum space factor and flux path, a magnetic cup-shaped stator including an efficient flux path return shell confining the winding and a generally cylindrical armature axially projecting into the winding and having a radial flange spaced from the shell by a small radial gap to reduce the length of the flux path through air while completing a flux path of minimum reluctance.

3,575,677
ELECTRIC CIRCUIT INTERRUPTER

Russell E. Frink, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 2, 1969, Ser. No. 788,588
Int. Cl. H01h *73/00*
U.S. Cl. 335—18 **5 Claims**

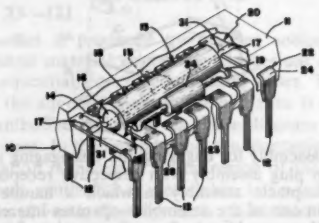


An electrical circuit interrupter having first and second contacts connected to first and second conductors, and a current transformer having a magnetic core and electrical winding assembly. The magnetic core of the current transformer is disposed to encircle one of the conductors, with a magnetic shield being disposed between the magnetic core and the other of the conductors, to prevent the flux from the other conductor from saturating a portion of the magnetic core.

3,575,678
REED SWITCH ASSEMBLY

William Forbes Barton, Arlington Heights, Ill., assignor to Grigsby-Barton, Inc., Arlington Heights, Ill.

Filed Oct. 6, 1969, Ser. No. 863,958
Int. Cl. H01h *51/28*
U.S. Cl. 335—151 **10 Claims**

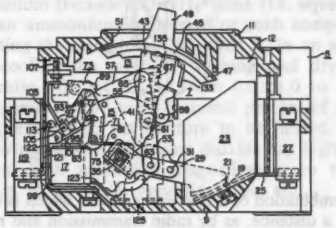


A relay assembly having a reed switch and an encircling coil encapsulated in an insulating body which also encloses a portion of a flat frame having a plurality of elongated contact members with inner end portions connected to terminals of the coil and switch within the body and outer end portions spaced apart in rows in parallel planes for insertion in printed circuit boards, the frame being formed from a blank having parts which cooperate with a mold to form the body.

3,575,679
CIRCUIT BREAKER WITH IMPROVED TRIP ADJUSTMENT MEANS

James P. Ellsworth, Beaver, and John Zipay, New Brighton, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 6, 1968, Ser. No. 703,409
Int. Cl. H01h *71/74*
U.S. Cl. 335—176 **35 Claims**

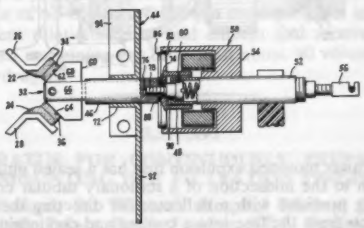


A circuit breaker, that comprises trip means automatically operable upon the occurrence of certain overload current conditions to trip the breaker and adjusting means selectively adjustable within a range of adjustment to adjust the trip means, comprises lock means or limit means selectively operable to change the range of adjustment.

3,575,680
CURRENT-LIMITING CIRCUIT BREAKER

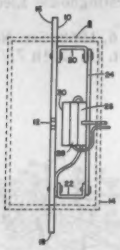
Norman R. Beaudoin, Bristol, and Robert W. Lauben, Farmington, Conn., assignors to General Electric Company

Filed Aug. 8, 1969, Ser. No. 848,426
Int. Cl. H01h *9/52*
U.S. Cl. 335—201 **6 Claims**



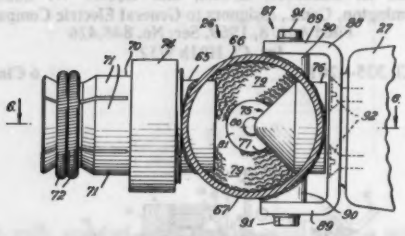
A current-limiting electric circuit breaker utilizes materials of high thermal conductivity in the movable contact assembly and provides means for conducting heat away from the contact area toward other members of the circuit breaker. The heat conducting means includes a heat cap on the muffle assembly having side flanges in intimate surface contact with the muffle enclosure and a heat fin mounted on the contact rod and having a portion in good thermal contact with a large metallic housing member having heat dissipating qualities.

3,575,681
REMOTE FUSE DESTRUCTION DEVICE
Alan Samuel Nusbaum, Phoenix, Ariz., assignor to Motorola, Inc.,, Franklin Park, Ill.
Filed June 11, 1969, Ser. No. 832,124
Int. Cl. H01h *85/00*
U.S. Cl. 337—1 **5 Claims**



The combination of a fuse and a means which is controllable from a distance, as by radio transmission and reception, to open a circuit by destroying the fuse.

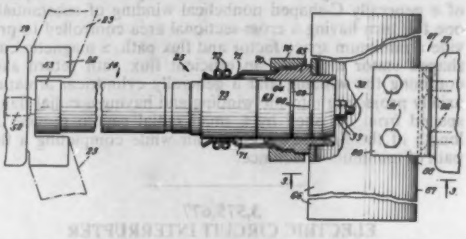
3,575,682
EXPULSION FUSE AND CONDENSER IN A HORIZONTALLY SLIDABLE DRAWER
Harold H. Fahnoe, Evanston, Ill., assignor to S & C Electric Company, Chicago, Ill.
Filed Sept. 15, 1969, Ser. No. 857,676
Int. Cl. H01h *85/38*
U.S. Cl. 337—282 **15 Claims**



A drawer mounted expulsion fuse has a sealed plug-in connection to the midsection of a stationary tubular condenser housing provided with a deflector for directing the exhaust products from the fuse into a cooling and condensing device at each end of the housing.

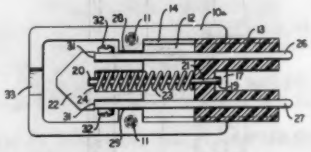
3,575,683
PLUG-IN EXPULSION FUSE WITH SEAL BETWEEN EXHAUST TERMINAL AND STATIONARY CONTACT SLEEVE
Harold H. Fahnoe, Evanston, Ill., assignor to S & C Electric Company, Chicago, Ill.
Filed Sept. 15, 1969, Ser. No. 857,883
Int. Cl. H01h *85/38*
U.S. Cl. 337—282 **5 Claims**

The exhaust terminal of an expulsion fuse is telescoped within a stationary contact sleeve with a seal therebetween to



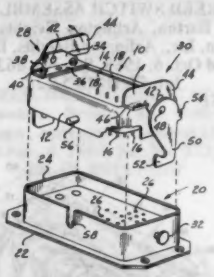
prevent flow of arc products between the terminal and the contact sleeve.

3,575,684
ELECTRICAL SAFETY PLUG ASSEMBLY
Charles S. McIntyre, R. 4, Box 73B, Greenfield, Ind.
Filed Aug. 22, 1969, Ser. No. 852,181
Int. Cl. H01r *13/44*
U.S. Cl. 339—42 **3 Claims**



Disclosed is an electrical plug for use in a conventional, electrical plug-in outlet which can be attached to an electrical appliance cord, for example, or used as an adapter. Both types have an insulating sheath which is spring-biased to a position covering the current-carrying prongs of the plug and which retreats, baring the prongs, as it is inserted into an electrical outlet.

3,575,685
ELECTRICAL PLUG TO RECEPTACLE LATCH
Paul R. Gley, Hillsdale, N.J., assignor to Rex Chainbelt, Inc., Milwaukee, Wis.
Original application June 12, 1967, Ser. No. 645,456, now Patent No. 3,488,622, dated Jan. 6, 1970. Divided and this application June 10, 1969, Ser. No. 854,331
Int. Cl. H01r *13/62*
U.S. Cl. 339—45 **4 Claims**



A latch assembly for engaging and disengaging a multiple contact pin plug assembly with respective receptacles of a friction receptacle assembly in which a handle movably mounted on one of the assemblies operates interengageable means on the assemblies to force the pins into frictional engagement in one direction of movement of the handle and positively withdraws the pins from the receptacles in the other direction of movement of the handle. My assembly provides a positive locking action when the contact pins are in the receptacle.

CHEMICAL

3,575,686

TREATMENT OF TEXTILES

John William Case, Norman Frederick Crowder, and Wilfred Arthur Stephen White, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 549,498, May 12, 1966. This application Oct. 14, 1966, Ser. No. 586,663

Claims priority, application Great Britain, June 24, 1965, 21,905/65

Int. Cl. D06l *1/02*

U.S. Cl. 8—142 6 Claims

There is provided an improvement in the process whereby textile materials are solvent scoured. The solvent is flashed off and thereafter the textile material is finished or dyed. The improvement resides in applying the finish or dyestuff in the flash-off stage of the known process.

3,575,687

PROCESS FOR THE SELECTIVE SEPARATION OF RARE EARTH METALS FROM THEIR AQUEOUS SOLUTIONS

James L. Drobnick, Lakewood, Paul R. Kruesi, Golden, and Tom P. Chen, Arvada, Colo., assignors to Molybdenum Corporation of America, Louviers, Colo.

No Drawing. Filed Sept. 12, 1969, Ser. No. 857,577

Int. Cl. C22b *59/00;* C01f *17/00*

U.S. Cl. 23—22 14 Claims

The recovery of rare earth metal values in aqueous solution by contacting the solution with an organic phase including an organic extractant comprised of a mixture of anionic and cationic extraction agents. The anionic agent is a quaternary ammonium or phosphonium compound and the cationic agent is selected from aliphatic and aryl phosphates, carboxylic acids, organophosphoric acids and oximes.

3,575,688

PRODUCTION OF HIGH-QUALITY SALT CAKE VIA VANTHOFFITE

Ulrich E. G. Neitzel and Jerome A. Lukes, Ogden, Utah, assignors to Great Salt Lake Minerals & Chemicals Corporation, New York, N.Y.

Filed Feb. 5, 1969, Ser. No. 796,802

Int. Cl. C01d *5/10*

U.S. Cl. 23—121 16 Claims

Vanthoffite is produced by reacting sodium chloride with mineral material containing magnesium and sulfate in two, sequentially arranged, reaction zones. The composition of the aqueous phase in the first zone is maintained in the vanthoffite region of the phase diagram descriptive of the system. In the second zone, the magnesium chloride concentration is increased to the region of the phase diagram where vanthoffite is metastable, but a sufficient concentration of vanthoffite crystals is maintained in this zone to insure continued vanthoffite formation. The vanthoffite is dissolved, and the resulting solution is clarified and fed through a series of reactors with sequentially increasing concentrations of sodium chloride to produce high-quality sodium sulfate.

3,575,689

METHOD FOR MAKING FERROMAGNETIC CHROMIUM DIOXIDE

Toshihiro Mihara, Yukio Terada, and Eiichi Hirota, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

No Drawing. Filed July 31, 1968, Ser. No. 748,935

Claims priority, application Japan, Aug. 10, 1967, 42/51,674

Int. Cl. C01g *37/02;* H01f *1/00*

U.S. Cl. 23—145 5 Claims

Ferromagnetic chromium dioxide is prepared by mixing chromium trioxide and NH_4^+ ions (i.e. aqueous solution of an ammonium compound or such compound per se), heating the mixture at 280–480° C. in an autoclave, furnace-cooling the mixture, washing and drying. The weight ratio NH_4^+:CrO_3 is from 0.01:1.0 to 0.08:1.0. Advantageously, 0.01 to 20.0 atomic percent of tellurium is incorporated into the mixture to be heated. The obtained ferromagnetic chromium dioxide has high coercive force and high saturation magnetization so that it is useful e.g. in magnetic recording tape, etc.

3,575,690

HYDROGEN RECOVERY PROCESS

Raymond F. Wilson, Reese A. Peck, and Frank E. Guptill, Jr., Fishkill, N.Y., assignors to Texaco, Inc., New York, N.Y.

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,634

Int. Cl. C01b *1/18*

U.S. Cl. 23—212 13 Claims

A process for recovering hydrogen from hydrogen containing gases, especially refinery gases containing hydrogen at a concentration greater than 20 volume percent, by introducing a hydrogen extracting aromatic hydrocarbon into a hydrogenation catalyst zone at a point intermediate in said catalyst zone, in the presence of a hydrogen containing gas in countercurrent relationship to said aromatic hydrocarbon, removing a hydrogenated aromatic hydrocarbon effluent from the catalyst zone, introducing said effluent into a dehydrogenation catalyst zone at a point intermediate in said catalyst zone in the presence of an enriched hydrogen containing gas in countercurrent relationship to said effluent and recovering a hydrogen containing gas of at least about 90 volume percent hydrogen.

3,575,691

APPARATUS FOR CONTINUOUSLY PREPARING AND MOUNTING WET FILTRATION SPECIMENS

Alan Pollard, St. Thomas's Hospital Medical School, Lambeth Palace Road, London, SE.1, England, and Alfred G. Wright, 7 Cardigan Road, London, NW.6, England

Filed Mar. 14, 1967, Ser. No. 622,946

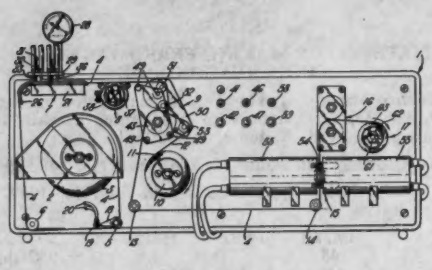
Claims priority, application Great Britain, Mar. 14, 1966, 11,082/66

Int. Cl. G01n *1/00*

U.S. Cl. 23—253 3 Claims

The invention consists in an apparatus for automatically filtering a succession of liquid/solid mixtures so as to deposit the solid component of each mixture on an individual discrete portion of the length of a continuous strip

of filter medium and thereafter retaining the solids on the strip by adhesively securing a protective film to at least one face of the strip. The protected strip with the



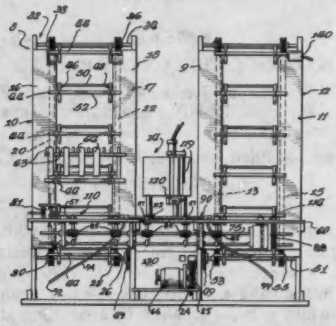
solids retained in the order of their deposition may thereafter be examined and/or stored (e.g. in reeled form) without risk of disturbing the solids.

3,575,692

LIQUID SAMPLE RACK HANDLING APPARATUS

Saul R. Gilford, Oberlin, Ohio, assignor to Gilford Instrument Laboratories Inc., Oberlin, Ohio

Filed Sept. 20, 1968, Ser. No. 761,055
Int. Cl. G01n *1/00, 31/00*
U.S. Cl. 23—253 **6 Claims**



A conveyor apparatus for handling a plurality of liquid sample containers upon which sample tests are to be performed. The apparatus has a feed elevator onto which a plurality of racks holding the sample containers are placed by a technician. The feed elevator moves the racks to a conveyor table along which the intended tests are performed. A programming device controlled by a fiber bundle sensing system automatically starts and stops the conveying and testing operations at suitable stages of operation of the apparatus. A storage elevator is provided adjacent the conveyor table to remove and store the racks which hold containers upon which testing has been completed until the same can be removed therefrom by a technician.

3,575,693

PROCESS FOR THE PRODUCTION OF PHOSPHONITRILIC HALIDES

John Emsley, Barnet, and Peter Balfour Udy, London, England, assignors to Castrol Limited, London, England

No Drawing. Filed Mar. 15, 1968, Ser. No. 713,306
Claims priority, application Great Britain, Mar. 16, 1967, 12,381/67
Int. Cl. B01j *11/00*; C01b *25/00*
U.S. Cl. 23—357 **13 Claims**

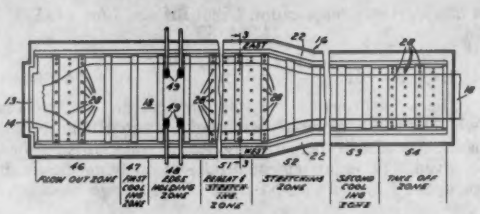
Cyclic polymers of the formula $(PNCl_2)_n$ wherein n is an integer of at least 3 are prepared by reacting phosphorus pentachloride with ammonium chloride in the presence of a catalyst of the formula PAX_3 wherein A is oxygen or sulphur and X is chlorine or bromine, the phosphorus pentachloride, ammonium chloride and the catalyst being in specified molar proportions.

3,575,694

METHOD OF MANUFACTURING TAPERED GLASS

Achille M. Bigliardi, Jr., Inkster, Kenneth E. Coburn, Franklin, and Frederick A. Scheer, Dearborn, Mich., and Robert J. Thompson, Nashville, Tenn., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 30, 1968, Ser. No. 756,439
Int. Cl. C03b *18/02*
U.S. Cl. 65—63 **3 Claims**



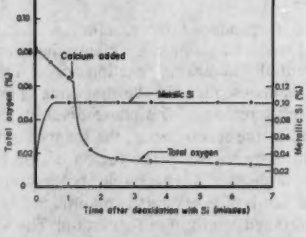
A method of producing a glass ribbon with a tapering thickness across the width thereof has the following steps. Molton glass forming materials are flowed out upon a molten tin bath to produce a glass ribbon of substantially uniform thickness. The molten glass ribbon moves in a direction downstream of the chamber and the ribbon is uniformly cooled to a temperature whereat the viscous glass is semi-rigid and resistant to flow. Advancement of the glass ribbon is retarded by edge rolls engaging opposite edges of the glass ribbon. The heat content of the glass ribbon across the width thereof is controlled to establish a differential temperature profile in the ribbon of glass. The higher temperature portion of the ribbon achieves a pliable condition while the cooler portion of the ribbon remains resistant to flow. A stretching force is applied to the glass ribbon between the point of retardation and the end of the processing chamber and this force attenuates the glass ribbon differentially to produce a taper in the glass ribbon across its width. The attenuated ribbon is thicker at that portion originally at the higher temperature.

3,575,695

DEOXIDATION METHOD OF MOLTEN STEEL

Yoshio Miyashita and Katuhiko Nishikawa, Kawasaki-shi, Kanagawa-ken, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1968, Ser. No. 766,542
Claims priority, application Japan, Oct. 18, 1967, 42/66,602
Int. Cl. C21c *7/02, 7/06*
U.S. Cl. 75—51 **6 Claims**



Method of deoxidizing molten steel by adding calcium or calcium alloy to the lower part of the molten steel in a vessel after or during deoxidation. By increasing

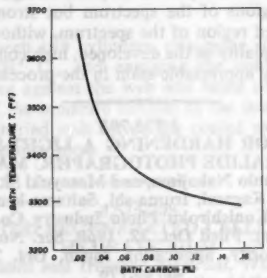
the yield of calcium in the molten steel, floatation of some inclusions are rapidly accelerated and then those are easily separated, and the presence of harmful macro inclusions may be decreased in a great quantity.

3,575,696

PROCESS FOR CONTROLLING THE MANUFACTURE OF HIGH-CHROMIUM STEELS

Frederick H. Rehmus, Baldwin Borough, Julius D. Shimkets, Pittsburgh, Egil Aukrust, Bethel Park, and David H. Wakelin, Pittsburgh, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Sept. 19, 1968, Ser. No. 760,774
Int. Cl. C21c *5/32*
U.S. Cl. 75—60 4 Claims



The refining by oxygen blowing of high-chromium low-carbon molten steel is controlled by measuring the temperature of the metal during blowing, which temperature is related to the carbon content.

3,575,697

ACID LEACHING OF MANGANESE FROM SILICEOUS ORES AND SLAGS

Henry Dolezal, Salt Lake City, Utah, assignor to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Jan. 7, 1969, Ser. No. 789,608
Int. Cl. C22b *47/00*
U.S. Cl. 75—80 11 Claims

A process for recovering manganese from siliceous ores or slags comprising (1) mixing the ore or slag with an inorganic boron compound, (2) melting the mixture and holding it in the molten state until homogenous, (3) quenching the molten mixture, and (4) leaching manganese from the quenched mixture with an acid solution. The manganese obtained by the process of the invention finds utility in a wide variety of uses, e.g., in manufacture of alloy steels, as a purifying and scavenging agent in production of metals and as a source of manganese chemicals.

3,575,698

ELECTROPHOTOGRAPHIC MATERIAL

Yoshinobu Murakami and Kazuhisa Morimoto, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 17, 1968, Ser. No. 737,787
Claims priority, application Japan, Aug. 1, 1967, 42/49,661
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6 5 Claims

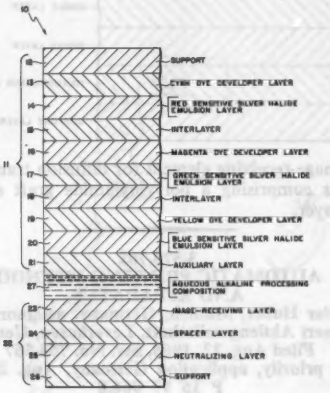
An improved electrophotographic material comprising a conductive support layer and a photoconductive insulating layer, the latter comprising a combination of a photoconductive poly-compound and a carbonium salt as novel sensitizer, said photoconductive polymeric compound comprising at least one of poly-N-vinylcarbazole, poly-3,6-dibromo-N-vinylcarbazole, brominated poly-N-vinylcarbazole, polyacenaphthylene and polyvinylanthracene.

3,575,699

PHOTOGRAPHIC PRODUCTS AND PROCESSES COMPRISING ALKALI-HYDROLYZABLE ANTIFOGGANT PRECURSORS

Stanley M. Bloom, Waban, and Howard G. Rogers, Weston, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 3, 1968, Ser. No. 756,838
Int. Cl. G03c *1/34, 5/54, 7/00*
U.S. Cl. 96—3 33 Claims



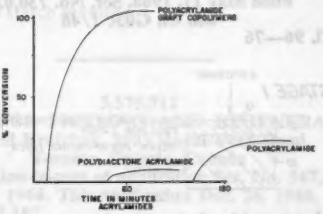
Antifoggant precursors of the Formula A—Z, wherein A is an antifoggant nucleus resultant from the deprotonization of the antifoggant A—H, and Z is a moiety which masks the antifoggant functionality of A, provide substantially no antifoggant effect on photographic systems in which they are contained until cleavage of the masking moiety from the antifoggant nucleus is accomplished.

3,575,700

POLYVINYLAMIDE GRAFTS IN SPACER LAYERS FOR COLOR DIFFUSION TRANSFER LIGHT SENSITIVE UNITS

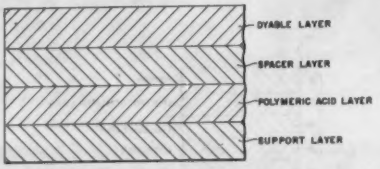
Lloyd D. Taylor, Everett, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 641,669, May 26, 1967. This application Jan. 13, 1969, Ser. No. 790,648
Int. Cl. G03c *5/54, 7/00*
U.S. Cl. 96—3 63 Claims



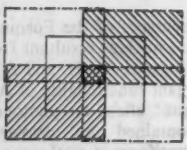
A sensitive photographic element for diffusion transfer color systems wherein two of its sensitized layers containing dye image-forming material soluble and diffusible in alkali are separated from each other by a layer comprising polyvinyl amide graft copolymers.

3,575,701
POLYVINYLAMIDE GRAFTS IN SPACER LAYERS FOR COLOR DIFFUSION TRANSFER IMAGE-RECEIVING UNITS
Lloyd D. Taylor, Everett, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of application Ser. No. 641,670, May 26, 1967. This application Jan. 13, 1969, Ser. No. 790,747
Int. Cl. G03c 7/00
U.S. Cl. 96—3 49 Claims



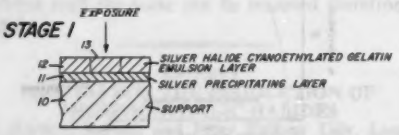
An image-receiving element for diffusion transfer color processes comprising a polyvinylamide graft copolymer spacer layer.

3,575,702
AUTOMATIC PRINTING METHOD AND APPARATUS
Hans-Peter Huber, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Aug. 22, 1968, Ser. No. 754,567
Claims priority, application Germany, Aug. 27, 1968, P 15 97 066.8
Int. Cl. G03c 5/08; G03b 27/78
U.S. Cl. 96—23 7 Claims



Reproduction of images of color photographic positive or negative originals onto printing paper is regulated by an adjustable exposure control which receives impulses from an evaluating circuit. The latter adjusts the exposure control as a function of the average density of that area of the original which has a maximum average contrast. The average contrast of several areas of the original can be determined by the process of elimination.

3,575,703
PHOTOGRAPHIC DIFFUSION TRANSFER PRODUCT AND PROCESS
Malcolm Lawrence Judd and Robert Leslie Schneider, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 17, 1968, Ser. No. 730,029
Int. Cl. G03c 1/48
U.S. Cl. 96—76 12 Claims



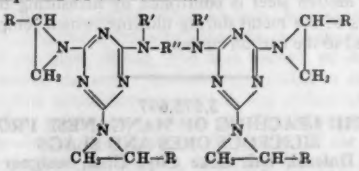
A photographic element having a support carrying a hardened silver precipitating stratum containing silver precipitating nuclei and an overlying light sensitive silver halide stratum comprising cyanoethylated gelatin. A silver image is formed in the silver precipitating stratum by diffusion transfer. The overlying light sensitive layer is easily removed because the cyanoethylated gelatin is not hardened by hardner which may migrate thereto.

3,575,704
HIGH CONTRAST LIGHT SENSITIVE MATERIALS
Eugene D. Salesin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed July 9, 1968, Ser. No. 743,333
Int. Cl. G03c 1/08, 1/40
U.S. Cl. 96—94 16 Claims

Photographic elements comprising a support coated with a hydrophilic colloid layer containing a fine grain, high contrast silver halide emulsion that is orthochromatically sensitized with a decolorizable spectral sensitizing dye that produces a modicum of sensitivity in the red region of the spectrum, said elements having poor tolerance to red safelight are made tolerant to red safelight by incorporating in the hydrophilic colloid layer with or above the silver halide, a water-soluble anthraquinone dye which has substantially no absorption of light in the blue and green regions of the spectrum but strongly absorbs light in the red region of the spectrum, without adversely affecting the quality of the developed, high contrast images or leaving any appreciable stain in the processed element.

3,575,705
METHOD FOR HARDENING A LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL
Shui Sato, Tomio Nakajima, and Masayuki Shono, Tokyo, and Teruo Kagami, Iruma-shi, Saitama-ken, Japan, assignors to Konishiroku Photo Industry Co., Ltd.
No Drawing. Filed Oct. 22, 1968, Ser. No. 769,698
Claims priority, application Japan, Oct. 27, 1967, 42/68,776
Int. Cl. G03c 1/30; C09b 11/00
U.S. Cl. 96—111 5 Claims

A compound of the formula



wherein R is hydrogen, methyl or ethyl; R′ is hydrogen or a group capable of forming a piperazine ring together with R″ and N; and R″ is an alkylene radical having less than 10 carbon atoms or a substituted or non-substituted phenylene group is added to a light sensitive gelatinous silver halide photographic material to harden same.

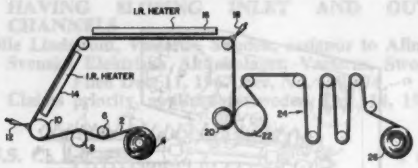
3,575,706
COATING BASIC OXYGEN LANCE AND METHOD OF COATING
Richard L. Ummel, Park Forest, Ill., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed May 6, 1968, Ser. No. 728,103
Int. Cl. B44c 1/06; C21c 5/32
U.S. Cl. 117—18 10 Claims

Buildup of slag and other material on the lance of a basic oxygen furnace is prevented by coating the lance prior to use with a composition comprising finely divided inorganic particulate matter embedded in an oleaginous carrier.

3,575,707
METHOD OF COST COATING PAPER
Theodor Ploetz, Hosel, Bruno Hagg, Monchengladbach, and Wolfgang Barnscheidt, Neuss, Germany, assignors to Feldmuhle Aktiengesellschaft, Dusseldorf, Germany
Filed Nov. 26, 1968, Ser. No. 779,115
Claims priority, application Japan, Nov. 27, 1967, 42/76,072
Int. Cl. B44l 1/44; D21h 1/22
U.S. Cl. 117—64 8 Claims

Paper and cardboard are cast coated in continuous operation by overdrying the web carrying a moist coating until the residual water content of the coated web is

substantially lower than its equilibrium moisture content under standard conditions, moistening only the overdried coating with so little water that the resulting combined moisture content of the web and coating does not substantially exceed the equilibrium moisture content, but the coating is softened, and passing the web and softened



coating between two cylinders, one being smooth heated to above 100° C., and engaging the coating, and the other pressing against the web and being soft enough so that most of the moisture content of the coating migrates into the overdried web before the coated web is released from the pressure zone.

3,575,708

COATED REGENERATED CELLULOSE HYDRATE FILM

Wilhelm Brandt and Irmgard Bindrum, Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

No Drawing. Original application Dec. 1, 1966, Ser. No. 598,171, now Patent No. 3,520,717, dated July 14, 1970. Divided and this application Nov. 3, 1969, Ser. No. 873,630

Int. Cl. C09j *7/02*

U.S. Cl. 117—122 **1 Claim**

This invention relates to a regenerated cellulose hydrate film having a homogeneous coating thereon comprising an adhesive additive selected from the group consisting of a phenoplast and an aminoplast in admixture with a vinylidene chloride copolymer containing about 0.01 to 1 percent by weight, based upon the weight of the copolymer, of at least one accelerator compound selected from the group consisting of tri- and tetrahydroxy benzophenones.

3,575,709

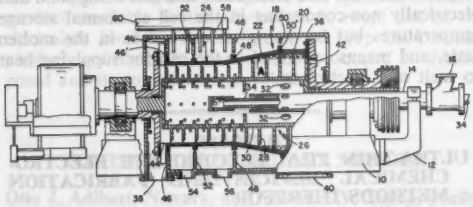
METHOD OF CLEANING SUGAR CRYSTALS

Francis X. Ferney, Walpole, Mass., assignor to Bird Machine Company, Walpole, Mass.

Filed Aug. 20, 1968, Ser. No. 753,966

Int. Cl. B04b *5/00*; C13f *1/10*

U.S. Cl. 127—56 **8 Claims**



A method of treating a magma of sugar crystals in syrup to remove impurities from the crystal surfaces in which the crystals are subjected to scrubbing in the magma in the bowl of a continuous centrifuge, and are then drained and fed over a rotating screen on which they may be washed.

3,575,710

PROCESS OF SEPARATING GLUTEN FROM STARCH AND OTHER SOLIDS

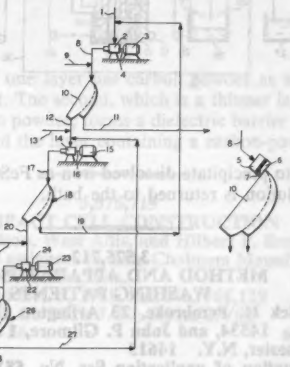
Karl Erik Bernhard Plaven, Scheelegatan 1, Stockholm, Sweden

Original application May 24, 1965, Ser. No. 458,230. Divided and this application Nov. 6, 1968, Ser. No. 773,891

Claims priority, application Sweden, June 1, 1964, 6,638/64

Int. Cl. C13l *1/00*

U.S. Cl. 127—67 **1 Claim**



A process for separating gluten from starch in a pretreated dough made from flour and water. A pump has an inlet and an outlet and a first pipe for leading the pretreated dough to the inlet. A screen connected to the outlet by a second pipe separates the gluten and water. A third pipe leads the water separated from the gluten from the screen and a fourth pipe leads the gluten separated from the screen. A perforated plate located between the outlet from said pump and the inlet to the screen is provided through which the gluten lumps are pressed by the aid of the water. A second series of elements as above is connected to the fourth pipe and additional series as desired similarly connected. Additional means are provided to supply water to the second pipes. The gluten when pressed through the respective passages is first given a shape of a thin-walled tube or blister which is then torn by the action of the liquid under pressure into thin threads or bands which after the gluten has left the passages again collect into lumps of a porous sponge-like structure, so that the gluten shall have large surfaces of contact with the water, which facilitates and accelerates removal of the starch granules.

3,575,711

PROCESS FOR PICKLING AND REGENERATING

David Krofchak, 1003 Royal York Road, Toronto, Ontario, Canada

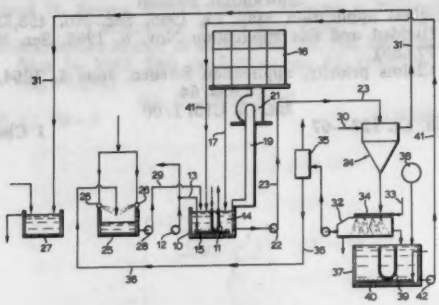
Continuation-in-part of application Ser. No. 547,556, May 4, 1966. This application Dec. 26, 1968, Ser. No. 787,187

Int. Cl. C23g *1/36*

U.S. Cl. 134—3 **4 Claims**

A process for pickling iron and steel articles and for regenerating used pickle liquor for re-use in which the articles are pickled in hot aqueous sulphuric acid bath, the bath is actively agitated by air injection to promote efficient heating and maintain uniform conditions through-

out the bath. Used solution containing 8% to 12% by weight dissolved iron is removed from the bath and

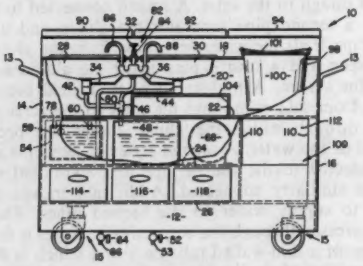


cooled to precipitate dissolved iron as $FeSO_4 \cdot 7H_2O$. Iron-free solution is returned to the bath.

3,575,712
METHOD AND APPARATUS FOR WASHING PATIENTS

Frederick H. Pembroke, 23 Arlington Drive, Pittsford, N.Y. 14534, and John P. Gilmore, 1 Lakeview Park, Rochester, N.Y. 14613

Continuation of application Ser. No. 581,396, Sept. 22, 1966, which is a division of application Ser. No. 333,563, Dec. 26, 1963. This application July 28, 1969, Ser. No. 859,516
Int. Cl. B08b *7/04*; D21b *1/10*
U.S. Cl. 134—6 **20 Claims**



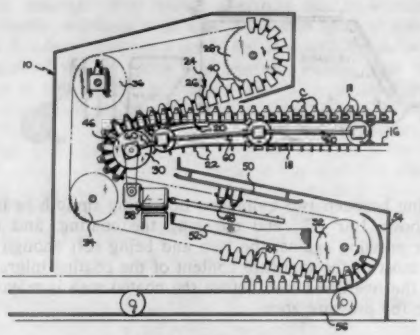
A method for cleansing the surface of a human body including the three separate and sequential steps of washing, rinsing and drying, each step including the use of a separate, disposable, and antiseptically treated toweling, to prevent secondary infection in hospitals.

3,575,713
METHOD AND APPARATUS FOR CLEANING CONTAINERS

John R. Duff, Toledo, and Alfred S. Decker, Lancaster, Ohio, assignors to Owens-Illinois, Inc.

Filed July 31, 1969, Ser. No. 846,326
Int. Cl. B08b *9/00*
U.S. Cl. 134—23 **14 Claims**

A method and apparatus for cleaning hollow articles such as bottles as they are taken from storage and fed into a filling line in a bottling plant. Bottles are transferred in individual bottle receiving pockets from an infeed conveyor through a rinser to a discharge conveyor which may be at a different level than the infeed conveyor. The pockets are on an endless conveyor and are constructed to permit loading and unloading of the pockets continuously without abusing the bottles. The bottles are loaded into the pockets by synchronized merging of the paths of the pockets and bottles on the infeed conveyor. The pockets, while moving with the bottles are lowered onto the bottles while the bottles are

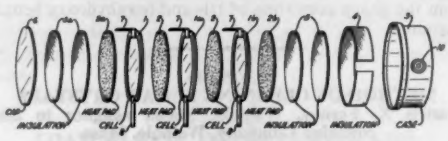


upright and then pass around a direction changing sprocket to invert the pockets to support the bottle's mouth downwardly with the mouth exposed to an upwardly directed rinsing spray. After rinsing, the pockets pass around another sprocket, after which the bottles drop from the pockets onto a discharge conveyor.

3,575,714
THERMAL TYPE PRIMARY CELL

Owen G. Bennett, Brooklandville, and John P. Woolley, Ruxton, Md., assignors to Catalyst Research Corporation, Baltimore, Md.

Filed Aug. 7, 1953, Ser. No. 372,872
Int. Cl. H01m *21/14*
U.S. Cl. 136—83 **5 Claims**



1. A thermal, or deferred action, cell comprising spaced calcium and nickel electrodes, an inorganic salt disposed between said electrodes, said salt being solid and electrically non-conducting in the cell at normal storage temperatures but becoming an electrolyte in the molten state, and means contained in the cell for supplying heat to melt said electrolyte.

3,575,715
ULTRA-THIN FILM ELECTROLYTE ELECTRO-CHEMICAL DEVICES AND FABRICATION METHODS THEREFOR

Joseph I. Masters, Lexington, Paul Vouros, Cambridge, and James P. Clune, Danvers, Mass., assignors to Technical Operations, Incorporated, Burlington, Mass.

Filed Aug. 20, 1968, Ser. No. 754,018
Int. Cl. H01m *11/00*
U.S. Cl. 136—83 **14 Claims**

This disclosure depicts ultra-thin film solid electrolyte devices for use as batteries, sensors, and the like, comprising electrodes and solid electrolytes all formed by vacuum

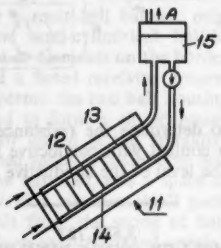
deposition. Evaporated electrolyte layers of silver bromide, silver iodide, and potassium silver iodide (KAg_4I_5) are disclosed. Novel fabrication methods are shown, especially for minimizing ionic and interface resistance in such devices.

3,575,716

METHOD OF OPERATING A FUEL CELL BATTERY HAVING SLOPING INLET AND OUTLET CHANNELS

Olle Lindstrom, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Dec. 11, 1967, Ser. No. 689,474
Claims priority, application Sweden, Dec. 14, 1966, 17,109/66
Int. Cl. H01m 27/12
U.S. Cl. 136—86 **1 Claim**



In a fuel cell battery which comprises electrodes and spaces therebetween and also outer spaces outside the electrodes for a combustible substance or oxidant respectively, there are two channels, one inlet and one outlet channel. At least the outlet channel is arranged at an angle to the horizontal plane and with its uppermost part connected to a device for feeding back electrolyte to the inlet channel.

3,575,717

METHOD OF GENERATING POWER IN MOLTEN ELECTROLYTE FUEL CELL

Walter Juda, Lexington, and David McLeod Moulton, Scituate, Mass., and Hans L. Gruber, Innsbruck, Austria; said Juda and Moulton assignors to Prototech Incorporated, Cambridge, Mass., and said Gruber assignor to Atlantic Richfield Company, Philadelphia, Pa.

Continuation of application Ser. No. 336,264, Jan. 7, 1964. This application May 8, 1968, Ser. No. 727,749
Int. Cl. H01m 27/20
U.S. Cl. 136—86 **8 Claims**

Halogen-containing molten electrolyte fuel cell is operated so that the actual output voltage exceeds the standard output voltage. Hydrogen-iodide gaseous reaction product insoluble in the electrolyte is swept out of the electrolyte immediately as formed to keep the reaction product activity low. The reaction product is decomposed and its constituents recycled.

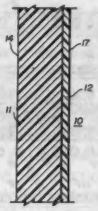
3,575,718

COMPOSITE ELECTROLYTE MEMBER FOR FUEL CELL

Otto J. Adlhart, Newark, and Virendra V. Tanna, Parlin, N.J., assignors to Engelhard Minerals & Chemicals Corporation, Newark, N.J.

Filed Sept. 23, 1968, Ser. No. 761,682
Int. Cl. H01m 27/00, 11/00
U.S. Cl. 136—86 **14 Claims**

Thin flexible fuel cell electrolyte members, which also serve as effective barriers between the cathode and anode compartments in a fuel cell and which are useful for fuel cells operating in the temperature range of 80°–250° C. are composite structures having two dissimilar layers, each consisting of a matrix and a concentrated liquid acid immobilized in such matrix. The matrix of each layer is comprised of a fluorocarbon gel and inert filler particles.



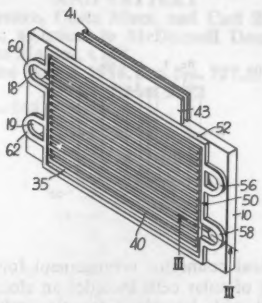
The matrix of one layer has carbon powder as an essential component. The second, which is a thinner layer contains no carbon powder, forms a dielectric barrier between the cathode and the layer containing a carbon-powder.

3,575,719

COMPACT CELL CONSTRUCTION

Canden R. Nelson, West Allis, and Hilbert P. Bruss, New Berlin, Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Oct. 9, 1968, Ser. No. 766,129
Int. Cl. B01k 3/00; H01m 27/02
U.S. Cl. 136—86 **6 Claims**



A separable sealing construction for fuel cells and other electrochemical and membrane process cells which permits the nondestructive separation and restacking of the several unitary cells in a plurality of cells, or the disassembly and reassembly of elemental members comprising a single cell. The sealing construction comprises gasket means lying in the same geometric plane or planes as the fluid distribution matrix or matrices of the cell or cell assembly. A further feature is the provision of a symmetrical inlet and an outlet port arrangement in the cell frame which permits reverse edge orientation and reverse surface orientation of the cell frame, while still maintaining a proper fluid flow relation of the inlet and outlet conduits to the inlet and outlet ports.

3,575,720

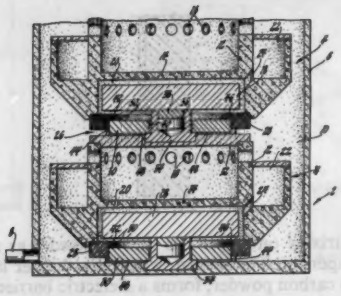
INSULATOR MEANS FOR LITHIUM-CHLORINE HIGH TEMPERATURE BATTERY

Gale M. Craig, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

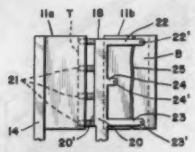
Filed Feb. 3, 1969, Ser. No. 795,961
Int. Cl. H01m 29/04
U.S. Cl. 136—86 **5 Claims**

Substantially environmentally inert electrical insulators and insulated conductors for use in the $Li|LiCl|Cl_2$ electrochemical system. The insulators and conductors are composites having Cl_2-inert and Li-inert barriers which shield

vulnerable composites from chlorine or lithium attack. Specific material disclosed include combinations of aluminum nitride, carbon, graphite, molybdenum, Kovar and stainless steel.



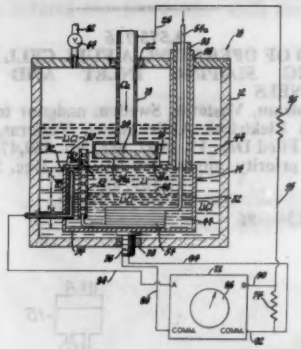
3,575,721
SOLAR CELL ARRAYS AND CONNECTORS
Alfred E. Mann, Sylmar, Calif., assignor to Textron Inc.
Filed Apr. 26, 1965, Ser. No. 450,597
Int. Cl. H01k *15/02*
U.S. Cl. 136—89 **5 Claims**



An electrical connector arrangement for interconnecting an array of solar cells includes an elongated, flexible strip formed with laterally projecting tabs attached to adjacent rows of solar cells. The tabs are dimensioned and attached so as to preserve electrical continuity between various cells in the event that cell cracking occurs that otherwise would disrupt electrical continuity. The flexible strip incorporates short tabs projecting from one side for connection with a top electrode of one cell and at least one extended tab laterally projecting from the other strip side for connection with the bottom electrode of an adjacent cell. The extended tab bridges across the major portion of the bottom of the adjacent cell and is connected thereto only at points beyond the midpoint of the adjacent cell. Cracks splitting the cell in half are then prevented from completely incapacitating the solar cell.

3,575,722
LEVEL INDICATOR FOR CONDUCTIVE LIQUIDS
Gale M. Craig, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 19, 1969, Ser. No. 808,612
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 **2 Claims**

A liquid level indicator measures the level of a conductive liquid contained in a metallic reservoir. A sidewall portion of the reservoir is included in a current conductive path supplied by a source of current applied to one end of the reservoir. A measuring system monitors both the voltage drop produced by current flow through a portion of the reservoir sidewall and also the value of current which produces the voltage drop. The ratio of the amount of voltage drop to the value of current flow



is measured to determine the resistance of the sidewall portion not in contact with conductive liquid to give an indication of the level of the conductive liquid.

3,575,723
DIVALENT SILVER OXIDE-ZINC PRIMARY CELL AND METHOD OF FORMING
Elihu C. Jerabek, Delmar, N.Y., assignor to General Electric Company
Filed Dec. 17, 1969, Ser. No. 885,808
Int. Cl. H01m *17/00*
U.S. Cl. 136—102 **3 Claims**

A divalent silver oxide-zinc primary cell is disclosed which comprises a casing, a zinc anode positioned in the casing, a separator on each side of the anode, a divalent silver oxide cathode on each side of the anode adjacent each separator and spaced from the anode, and a viscous electrolytic solution contained within the cell. A method is also disclosed for forming such a cell wherein a viscous electrolytic solution is added to the cell during assembly.

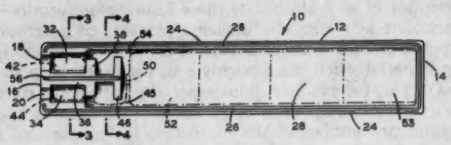
3,575,724
CYLINDRICAL PRIMARY DRY CELLS
Jean Firmin Jammet, Poitiers, and François Michel Joyeux, Sourdeau Chasseneuil, France, assignors to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France
Filed June 4, 1969, Ser. No. 830,359
Claims priority, application France, Nov. 12, 1968, 173,274
Int. Cl. H01m *21/00*
U.S. Cl. 136—107 **2 Claims**

Cylindrical primary dry cell including a cylindrical negative electrode embracing a depolarizer mass provided with a conductive rod serving as a positive electrode, the outer end of said rod protruding from the closure of the cell and optionally covered by a metal cap, the negative electrode being a curved metallic sheet of zinc or magnesium whose longitudinal edges do not meet, the outer surface of said sheet, except for an annular zone, bearing a synthetic non-conductive casing molded thereon and filling the space between said edges and which also serves as a bottom closure for such cell, a plastic cover mounted in the open end of said curved metallic sheet and being sealing pressed against the inner wall of said sheet in the region of its uncoated zone by a metal ring of substantial L-shaped half-section mounted thereon and whose diameter is reduced after mounting, the cover also having an escape valve arrangement for gases evolved during use of the cell.

3,575,725
BATTERY ASSEMBLY

Gordon E. Kaye, South Salem, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Mar. 27, 1969, Ser. No. 811,117
Int. Cl. H01m 1/00
U.S. Cl. 136—108 6 Claims

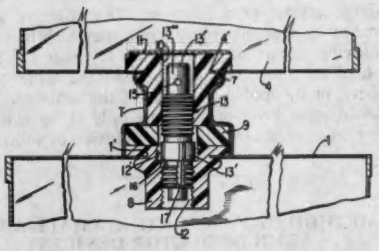


A housing for a multi-cell battery, originally of two pieces, as hollow semi-cylindrical half-housings, with raised rib element or elements on the border edges of one half housing, and a fluted receiving groove on the other half housing, to permit the two half housings to be easily and readily mated to form a closed housing which can then be bonded or sealed at the mutually fitting edges; the major elongated space in the hollow housing provides a chamber for the batteries, and a space in front of the batteries is sub-divided into two small pockets to receive electrode terminals from the string of batteries, and to communicate with co-axially aligned openings in the front end of the housing to receive insertion of external prongs from an external plug, to be connected to the terminals. Two transverse bracing flanges between the front and rear compartments serve to brace the electrode terminals in their pockets against the insertion pressure of external prongs; and to press the string of cells co-axially against the back wall of the housing, so one half-housing may serve as an assembly box for the string of batteries and their terminals during assembly in manufacture.

3,575,726
PRIMABLE ELECTROCHEMICAL GENERATOR AND ELECTROLYTE RESERVOIR STRUCTURE

Yannick Marsault, Poitiers, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Filed Sept. 11, 1969, Ser. No. 857,112
Claims priority, application France, Sept. 11, 1968, 165,868
Int. Cl. H01m 21/00
U.S. Cl. 136—114 12 Claims

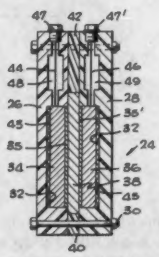


A primable electrochemical generator and electrolyte reservoir structure wherein electrolyte stored separately in a reservoir may be admitted into the container of a primable electrode separator unit at the desired time of use, so that said unit normally in the charged but dry state only then becomes primed for use as a power source. The reservoir has an orifice normally closed by a frangible partition which prevents flow of electrolyte to the unit until the partition is pierced or ruptured so that flow into the dry unit via a filling aperture can then occur. A first nozzle comprising a centrally tapped duct is provided in the filling aperture and one end of a tubular element is screwed into this duct. The other end of the tubular element is threadedly engaged in fluid tight manner in the duct of a second nozzle mounted in the orifice of the reservoir. A safety ring surrounding the tubular element and disposed between the adjacent terminal faces of the nozzles and must be removed at the time of priming. This ring prevents the end of said tubular element closest to the partition from engaging or piercing it. To effect priming action, the reservoir and its nozzle are unscrewed from the tubular element and the safety ring removed. Then the nozzle is remounted on the tubular element and screwed onto the latter, the addition space occasioned by removal of the spacing ring then permitting a sharpened end of the tubular element to move into piercing or rupturing contact with the partition thereby permitting flow of electrolyte via the tubular element from the reservoir into the unit. Any air within the unit is vented therefrom as electrolyte flows into it via one or more external grooves provided in the tubular element which are so located as to preclude formation of bubbles. Filling time is controlled by appropriate dimensioning of the tubular element and the grooves.

3,575,727
BATTERY SEPARATOR PRODUCTION AND BATTERY

Frank C. Arrance, Costa Mesa, and Carl Berger, Santa Ana, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed May 8, 1968, Ser. No. 727,394
Int. Cl. H01m 3/02
U.S. Cl. 136—146 11 Claims



Production of inorganic porous sintered battery separator consisting essentially of a solid solution of magnesium oxide and a minor portion of certain additive oxides of an element capable of entering the magnesium oxide crystal lattice, such as zirconium oxide, chromic oxide, and aluminum oxide, by procedure including sintering high purity magnesium oxide, e.g., at a temperature of about 1200° C., mixing such sintered magnesium oxide with a minor portion of a compound of the type noted above, e.g., chromium oxide, grinding such mixture, preferably under anhydrous conditions such as in the presence of absolute alcohol, to small particle size, preferably less than 5 microns, presintering such ground mixture, e.g., at a temperature of about 1200° C., cooling and again grinding the presintered mixture, preferably in the presence of absolute alcohol, to the above noted fine particle size, compacting such ground presintered mixture into separator membranes, finally sintering the separator membranes, e.g., at a temperature of about 1400° C. rapidly cooling to an intermediate temperature, e.g., of the order of about 1000° C., and then slowly cooling said finally sintered membranes to ambient temperature. The

resulting separators have high resistance to alkali, have high mechanical strength, and are particularly valuable for use in high rate batteries.

3,575,728

ELECTRIC CELLS USING UREA MONOSULFONIC ACID AS ELECTROLYTE

Hiroshi Ito, 31–7–814 1-chome Hatagaya Shibuya-ku, Tokyo-to, Japan

No Drawing. Filed Dec. 18, 1968, Ser. No. 784,948
Int. Cl. H01m *11/00*
U.S. Cl. 136—154 8 Claims

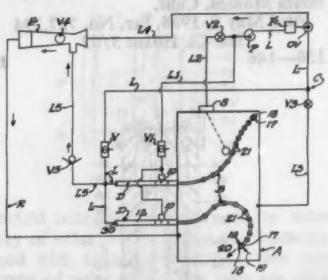
The invention provides an electric cell in which urea monosulfonic acid is used as the elctrolyte. The other parts of the cell, excepting the electrolyte, involve the following three types in combination of the elements; the first one comprising carbon as a positive electrode, zinc as a negative electrode and manganese dioxide or air as a depolarizer; the second one comprising iron or nickel as a positive electrode, zinc as a negative electrode and air as a depolarizer; and the third one comprising copper as a positive electrode, zinc as a negative electrode and cupric oxide as a depolarizer.

3,575,729

AUTOMATICALLY EXTENSIBLE AND RETRACTABLE SUCTION AND SCOURING ACTION POOL CLEANER

Herbert H. Howard, Woodland Hills, Calif., assignor to Blue Haven Pools, Inc., North Hollywood, Calif.

Filed Aug. 21, 1969, Ser. No. 851,813
Int. Cl. E04h *3/20*
U.S. Cl. 134—168 9 Claims



One or more cleaning sweeps, each comprising a scouring jet hose inside a suction hose, adapted to undulate over a swimming pool bottom with a combined jet scouring and suction cleaning action, are normally withdrawn into tubular housings beneath the pool deck, from which they are automatically projected into operative positions when pressurized water flow is applied to their rear ends for delivery through the jet hoses, suction being automatically applied to the suction hoses when the sweeps are fully projected, and the sweeps being retracted into their housings by the hydrostatic pressure of water in the pool when suction is applied to their rear ends.

3,575,730

VALVING FOR DEFERRED ACTION ELECTRO-CHEMICAL GENERATORS

Jean Henri Doll, Aulnay-sous-Bois, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Filed Dec. 11, 1968, Ser. No. 792,190
Claims priority, application France, Dec. 13, 1967, 131,995; Sept. 6, 1968, 165,361
Int. Cl. H01m *1/06, 1/08*
U.S. Cl. 136—177 14 Claims

Valving for deferred action generators to control and limit flow into the latter of activating electrolyte of such generators permitting venting otherwise entrapped air within the generators during fill flow of the electrolyte, the valving including a jellifying and expanding material that is normally porous but which is affected by the electrolyte upon contact therewith at completion of fill to jellify and expand and to become impervious and thus to shut off further venting of air from the electrolyte filled generator and also thereby to prevent egress from the generator of any electrolyte, thus insuring uniformity of electrolyte activating fill to such a plurality of generators supplied from a common source of electrolyte. The jellifying material when the electrolyte is, for example, potash (KOH) is, for example, flour especially corn flour, starch flour or like compounds or powdered salts such as magnesium or aluminum salts or oxides, the magnesium or aluminum salts being resistant to environmental moisture exhibit a double effect; they are subject to jellification and expansion when contacted by the electrolyte and afterwards they can be at least partially dissolved in it.

3,575,731

METHODS OF MANUFACTURING SEMICONDUCTOR DEVICES

Kinji Hoshi, Chiaki Kumazaki, Yoshinori Azuma, Toshitaka Tsuchihashi, Susumu Tadokoro, and Toshiro Kato, Kanagawa-ken, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 28, 1968, Ser. No. 708,946
Claims priority, application Japan, Mar. 1, 1967, 42/13,013, 42/13,014, 42/13,015, 42/13,016, 42/13,017
Int. Cl. H01l *7/00*
U.S. Cl. 148—1.5 16 Claims

In the manufacture of a semiconductor device, a semiconductor substrate has a surface thereof etched or otherwise formed with at least one profiled portion, such as, a projection or recess, having a face offset from the surrounding areas of that surface and sides extending from the face to the adjacent surface areas, at least two layers of different conductivity types are sequentially deposited on the substrate surface by the vapor growth technique to cover at least the face and sides of the projection or recess, and either the substrate or the outermost layer of the resulting element is selectively removed to expose, adjacent the sides of the projection or recess, a cross-section of at least the layer which is closest thereto. In order to facilitate attachment of an electrode to a layer at the exposed cross-section by increasing the width of the latter, the plane to which material is removed may be directed obliquely to the sides of the projection or recess, as by inclining the sides, or the position of the projection or recess may be selected so that its face and sides respectively correspond to crystal faces of relatively small and large crystal growth speeds. The effective width of a layer at its exposed cross-section may also be increased by alloying a part of an adjacent layer or the adjacent region of the substrate so as to have the same type conductivity, or by applying a layer of the same conductivity to the adjacent layer or substrate only at the sides of the projection or recess by either the diffusion or vapor growth process.

3,575,732

METHOD OF FABRICATING SMALL-AREA SEMICONDUCTOR DEVICES

Arthur Uhlir, Jr., Weston, Mass., assignor to Microwave Associates, Inc., Burlington, Mass.

Continuation-in-part of abandoned application Ser. No. 626,882, Mar. 29, 1967. This application June 6, 1969, Ser. No. 834,209
Int. Cl. H01l *7/54*
U.S. Cl. 148—15 13 Claims

This invention relates to a method of manufacturing extremely small area semiconductor devices by first producing very small apertures by means of energetic parti-

cles in non-conductive passivating layers placed on semiconductors, and the subsequent use of these apertures to fabricate semiconductor devices of exceptionally good high-frequency performance.

The technique is based upon the damage tracks produced in insulating solids used to passivate semiconductors by exposing them to energetic particles such as, for example, alpha particles above a threshold value, and subsequently etching away the damaged region to leave very small apertures in the insulating solid. Semiconductor plating and fabricating techniques are subsequently used to produce a variety of semiconductors and in particular semiconductors of the Schottky diode type.

3,575,733

ELECTRON BEAM TECHNIQUES IN INTEGRATED CIRCUITS

Olin B. Cecil, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Original application Jan. 3, 1966, Ser. No. 518,099, now Patent No. 3,453,723, dated July 8, 1969. Divided and this application Aug. 26, 1968, Ser. No. 755,356

Int. Cl. H01l *7/00*

U.S. Cl. 148—1.6 **15 Claims**

Disclosed in a method of producing hills or protuberances of material of and upon a crystalline substrate, each hill or protuberance having the same crystal orientation as the substrate, by directing the beam of energy upon the surface of the substrate for a time sufficient to produce such hills or protuberances.

3,575,734

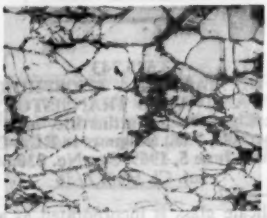
PROCESS FOR MAKING NICKEL BASE PRECIPITATION HARDENABLE ALLOYS

Donald R. Muzyka and Clyde Raymond Whitney, Reading, Pa., assignors to Carpenter Technology Corporation

Filed July 26, 1968, Ser. No. 747,864

Int. Cl. C22f *1/10*

U.S. Cl. 148—2 **14 Claims**



A process for making nickel base precipitation hardenable alloys, and alloys made thereby, which includes treating the metal while in a molten state under vacuum or an inert gas at low pressure with a reactive element selected from the group consisting of magnesium, calcium, neodymium, and the rare earth elements having a melting point greater than neodymium.

3,575,735

OXIDATION PROTECTIVE COATINGS FOR VANADIUM ALLOYS

Dean B. Lawthers, Pittsburgh, Pa., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 9, 1968, Ser. No. 766,309

Int. Cl. C23c *9/00*

U.S. Cl. 148—6 **2 Claims**

A slurry for coating vanadium base alloys to provide oxidation protection comprising a metal of either silver, tin, or copper, silicon, and a carrier such as nitrocellulose lacquer, to which also may be added aluminum and columbium.

3,575,736

METHOD OF ROLLING TITANIUM ALLOYS

John M. Fitzpatrick, Los Altos, and Aloysius T. Davinroy, Redwood City, Calif., assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Nov. 25, 1968, Ser. No. 778,760

Int. Cl. B21b *1/00, 3/00;* B21d *31/00;* C21d *1/00*

U.S. Cl. 148—11.5 **3 Claims**

A method for enhancing the strength to density ratio of alpha-beta type titanium alloys. The increased strength demonstrated by the alloys of this invention is achieved by favorably altering the crystallographic texture of the alloy. The alloy to be textured is hot rolled in at least three different orientations at a temperature within a range of from about 700° to 1500° F. This results in a reduction in the cross-sectional area of the alloy by about 60 to 90%.

3,575,737

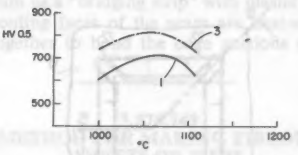
RAZOR BLADES AND OTHER THIN CUTTING EDGE TOOLS AND METHOD OF MANUFACTURE OF SUCH TOOLS

Jan-Christer Henric Ovesson Carlen, Sandviken, Sweden, and Francis Edward Flaherty, Canton, Mass., assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Filed June 25, 1968, Ser. No. 739,831

Int. Cl. C21d *9/18*

U.S. Cl. 148—12.4 **16 Claims**



A hot rolled steel strip containing 14% chromium is annealed at 825° C. for at least two hours and then cooled. The annealed strip is then cold rolled in several steps with intermediate recrystallization annealings to a thickness of about 0.2 mm. Then the strip is austenitized at a temperature of 1140° C. for about 5 seconds and then quenched to produce a martensite and austenite mixture with an austenite content of about 60%. The strip is then heated at 710° C. for two hours producing a precipitation of fine carbide grains in a matrix of ferrite. After further cold rolling with intermediate recrystallization annealings to the final thickness of 0.1 mm., the strip is heated to a temperature of about 1100° C., quenched to —80° C., and annealed at about 200° C.; an edge of the strip is ground to provide a sharpened razor edge; and a layer to improve the shaving properties is applied to the sharpened edge in a process involving heating the steel to a temperature between 200 and 400° C.

3,575,738

FLUXES FOR SOFT SOLDERING

Hugo H. Becker, Chicago, Ill., assignor to Lake Calumet Smelting Company, Chicago, Ill.

No Drawing. Original application July 5, 1966, Ser. No. 562,495, now Patent No. 3,459,606, dated Aug. 5, 1969. Divided and this application Mar. 19, 1969, Ser. No. 808,680

Int. Cl. B23k *35/36*

U.S. Cl. 148—25 **4 Claims**

Soldering fluxes manufactured from an admixture of rosin and water or isopropyl alcohol by addition thereto of ammonia or ammonium hydroxide in sufficient amount to convert said rosin to a soap.

3,575,739

SECONDARY RECRYSTALLIZATION OF SILICON IRON WITH NITROGEN

Howard C. Fiedler, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Nov. 1, 1968, Ser. No. 772,857
Int. Cl. H01f 1/16
U.S. Cl. 148—111 7 Claims

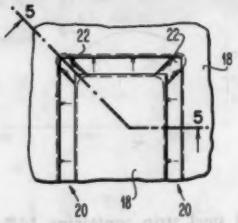
This invention discloses the production of silicon-iron sheet material useful as a magnetic material in electrical applications and which has the cube-on-edge or (110) [001] crystallographic grain orientation. Conventionally, this structure is produced by a phenomenon known as secondary recrystallization which has depended upon a dispersion of particles of sulfur compounds which are difficult to remove. It has been found that nitrogen compounds may be substituted for the sulfur compounds and the desired structure produced. The nitrogen is much easier to remove.

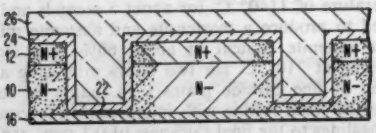
3,575,740

METHOD OF FABRICATING PLANAR DIELECTRIC ISOLATED INTEGRATED CIRCUITS

Paul P. Castrucci and John W. Mason, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 8, 1967, Ser. No. 644,601
Int. Cl. H01l 7/36, 3/00
U.S. Cl. 148—175 15 Claims





A method for fabricating dielectric isolated integrated devices which allows the formation of a truly planar surface. The method includes etching isolation channels in a semiconductor substrate through a suitable mask. The mask pattern is designed to enhance deeper etching at certain locations in the isolation channels. A dielectric layer is formed over the exposed surfaces of the isolation channels and a semiconductor material is grown in the channels. The deeper etched locations which are now filled with dielectric isolation are used as a depth guide in the formation of a dielectric layer from the semiconductor substrate surface opposite to the one from which the etching took place. The depth guide can be used in either a deep etch or lap-back process. The last isolation step is then to continue the dielectric layer past the depth guide to the major portion of the isolation channels to produce the fully isolated islands of semiconductor material in the semiconductor substrate.

3,575,741

METHOD FOR PRODUCING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND PRODUCT PRODUCED THEREBY

Bernard T. Murphy, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 5, 1968, Ser. No. 703,164
Int. Cl. H01l 7/64
U.S. Cl. 148—175 9 Claims

In the fabrication of a junction-isolated semiconductor integrated circuit structure, a plurality of N-type buried layers are diffused into a P-type substrate, and a thin P-type epitaxial layer is grown thereover. N-type deep contact zones are diffused completely through the epitaxial layer to intersect separate ones of the N-type buried layers, thus defining base areas. P-type impurities are then diffused non-selectively into the entire surface of the P-type epitaxial layer to form a graded impurity profile for the base zone. N-type emitter zones are then diffused selectively into the surface.

3,575,742

METHOD OF MAKING A SEMICONDUCTOR DEVICE

George J. Gilbert, Whitehouse Station, N.J., assignor to Solitron Devices, Inc.

Original application Nov. 9, 1964, Ser. No. 409,702, now Patent No. 3,484,309, dated Dec. 16, 1969. Divided and this application July 22, 1969, Ser. No. 862,112
Int. Cl. H01l 7/36, 7/44
U.S. Cl. 148—187 6 Claims

A semiconductor device is produced by depositing a p-type doped oxide onto the masked surface of an n-type semiconductor substrate, prediffusing the p-type impurity into the surface of the substrate, removing the center portion of the oxide and further diffusing the p-type dopant from the oxide into the substrate. To form a transistor, an emitter region is diffused into the substrate through the aforementioned center portion.

3,575,743

METHOD OF MAKING A PHOSPHORUS GLASS PASSIVATED TRANSISTOR

Frank Peter Chiovarou, Martinsville, and Adolph Paul Storz, Somerville, N.J., assignors to RCA Corporation

Filed June 5, 1969, Ser. No. 830,806
Int. Cl. H01l 7/36
U.S. Cl. 148—187 8 Claims

Phosphosilicate glass is incorporated as a stabilizer in the passivating oxide on the surface of a diffused planar bipolar transistor by (1) driving in a base diffusion in oxygen for a time less than that required to complete the base diffusion, (2) depositing phosphosilicate glass on the oxidized surface of the transistor, (3) depositing a protective silicon dioxide coating by the pyrolysis of silane, SiH_4, on the phosphosilicate glass, and then (4) densifying the silicon dioxide coating in an oxygen ambient for a time sufficient to complete the base drive-in step.

3,575,744

NITRONIUM PERCHLORATE PROPELLANT COMPOSITION

Thomas N. Scortia, Los Gatos, and Cornelius J. McCormick, Palo Alto, Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Filed Mar. 27, 1963, Ser. No. 268,457
Int. Cl. C06d 5/00
U.S. Cl. 149—19 2 Claims

1. A process for preparing a propellant containing nitronium perchlorate and a polymeric binder comprising

adding a perdetermined quantity of Group Ia metal to said polymeric binder whereby substantially all the water in said binder reacts with the Group Ia metal to form a hydroxide and subsequently adding to said polymeric binder a predetermined quantity of nitronium perchlorate.

3,575,745
INTEGRATED CIRCUIT FABRICATION
Bryan H. Hill, 3213 Lipton Lane, Dayton, Ohio 45430
Filed Apr. 2, 1969, Ser. No. 812,791
Int. Cl. B32b *31/14*; H01l *7/50*
U.S. Cl. 156—3 **5 Claims**

A technique for fabricating integrated circuits. The technique takes advantage of the fact that certain oxides such as Al_2O_3 and Ta_2O_5 have their susceptibility to etching materials retarded by irradiation with an electron beam while other oxides such as SiO_2 have their susceptibility to etching materials enhanced by irradiation with an electron beam. By taking advantage of the above facts one can etch openings in selected areas of oxide layers without resorting to complicated masking techniques previously required.

3,575,746
METHOD FOR FORMING RESISTIVE AND PHOTOETCHED RESISTIVE AND CONDUCTIVE GLAZE PATTERNS
Eugene M. Cheskis, Scottsdale, Ariz., and Franklyn M. Collins, Lewiston, N.Y., assignors to Air Reduction Company, Incorporated, New York, N.Y.
Filed Dec. 12, 1967, Ser. No. 690,014
Int. Cl. C23f *1/02*; H05k *1/00, 3/00*
U.S. Cl. 156—8 **8 Claims**

Precision microminiature electroconductive patterns are formed on a refractory substrate by overcoating the substrate with a thin electroconductive glaze and photoetching the glazed layer to yield the desired pattern.

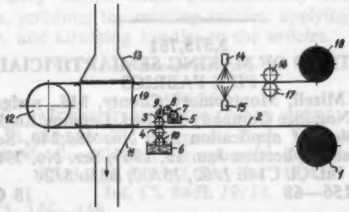
3,575,747
CHEMICAL POLISHING OF ALUMINUM
Charles C. Cohn, Atlantic City, N.J., assignor to Samuel L. Cohn and Charles C. Cohn, copartners, trading and doing business as Colonial Alloys Company, Philadelphia, Pa.
No Drawing. Continuation-in-part of application Ser. No. 711,174, Mar. 7, 1968. This application Jan. 21, 1969, Ser. No. 792,857
Int. Cl. C23f *3/00*
U.S. Cl. 156—19 **7 Claims**

Strongly acidic compositions are provided for the bright polishing of aluminum, including its alloys. The compositions are characterized by the presence of nitric acid in amounts ranging from about 0.25% to about 10%, together with an effective nitrous acid content of 0.001% to 1%, or more. Phosphoric acid is used in substantial amounts in compositions giving highly specular finishes; though smoothing is achieved with phosphoric acid as low as 3%. Sulphuric acid is used when the phosphoric acid content is low. Most desirable compositions contain both phosphoric acid and sulphuric acid in total amounts in excess of 60%. The compositions are used at elevated temperatures.

3,575,748
METHOD OF MAKING ELECTRICAL CABLE
Fred F. Polizzano, Allendale, N.J., assignor to General Cable Corporation, New York, N.Y.
Original application May 28, 1968, Ser. No. 732,755, now Patent No. 3,504,102, dated Mar. 31, 1970. Divided and this application Jan 28, 1970, Ser. No. 6,343
Int. Cl. H01b *13/00*
U.S. Cl. 156—54 **5 Claims**

This improved method of making electrical cable has a cable jacket formed by a tape folded longitudinally around the core of the cable; and the tape is a lamination of a very thin strip of metal, such as aluminum or copper, which serves as a vapor barrier, with a coating on both sides of the metal of much greater thickness than the metal and bonded directly to the metal, preferably by a "chemical bond." A lap seam is preferably reinforced by a longitudinally extending plastic-metal laminate tape under the seam as a "bridging strip" with plastic coating and the confronting faces of the seam are heat-softened and pressed together to bond the edge portions of the seam together.

3,575,749
METHOD FOR MAKING FIBROUS SHEETS OR WEBS
Karl Kristian Kobs Kroyer, Vestre Kongevej 80, Viby J., Denmark
Filed Jan. 4, 1968, Ser. No. 695,688
Claims priority, application Denmark, Jan. 5, 1967, 65/67, 66/67, 67/67; Jan. 6, 1967, 97/67; Jan. 25, 1967, 432/67; Feb. 3, 1967, 623/67; Mar. 10, 1967, 1,264/67; Mar. 15, 1967, 1,356/67
Int. Cl. B29j *5/02, 5/08*
U.S. Cl. 156—62.2 **3 Claims**



A method of making fibrous sheets or webs containing a binder by causing a stream of gas containing fibres to pass a gas permeable forming surface so as to form a fibre layer thereon and bonding together the fibres of the fibre layer by means of a binder. Apparatus for making fibrous sheets or webs containing a binder which apparatus comprises means for creating a stream of gas containing suspended fibres through a gas permeable forming surface so as to form a fibre layer thereon, means for applying a binder to the fibres and means for causing the binder to bind together the fibres of said fibre layer. Plate material consisting of a number of embossed fibre sheets which are glued together and which are formed by causing a stream of gas containing suspended fibres to pass through a permeable forming surface so as to form a fibre layer thereon and bonding together the fibres of the fibre layer by means

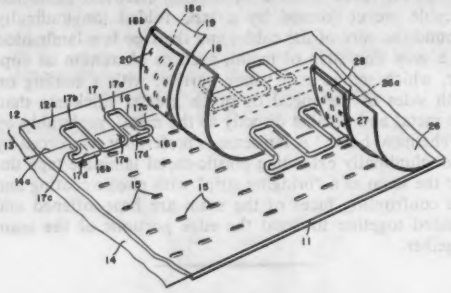
of a binder. Fibrous sheet or web consisting of two outer layers which have been prepared from cellulosic fibres and other fibres, if any, and a binder by causing a stream of gas containing suspended fibres to pass a gas permeable forming surface so as to form a fibre layer thereon and bonding together the fibres of the fibre layer by means of said binder and at least one intermediate cellulosic fibre layer which is bonded to the inner side of the outer layer(s) by means of a binder.

3,575,750

HOOK-EQUIPPED FABRIC STRUCTURE FOR GARMENTS AND METHOD OF PRODUCING SAME

Takashi Sakamoto, Osaka, Japan, assignor to Sakamoto Hook Kogyo Kabushiki Kaisha, Osaka-shi, Japan

Filed Apr. 1, 1968, Ser. No. 717,758
Claims priority, application Japan, Apr. 1, 1967, 42/20,323
Int. Cl. A41h *37/00;* A44b *19/04*
U.S. Cl. 156—66 **5 Claims**



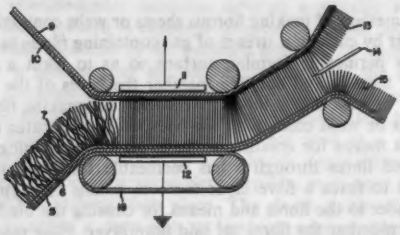
A hook-equipped fabric structure for garments including brassieres and a method of producing the same, wherein a hook interposed between superimposed fabric bodies is provided at its closed end portion with means defining an opening, the axis of which lies substantially normal to said confronting fabric bodies, with said superimposed fabric bodies being thereafter laminated firmly together by resinous material, at least one of said laminated fabric bodies being deformed complementally to the configuration of one side portion of the hook, thereby firmly attaching the hook to the fabric bodies.

3,575,751

METHOD OF MAKING SEMIARTIFICIAL PILE FABRICS

Louis R. Mizell, Montgomery County, Md., assignor to I.W.S. Nominee Company Limited, London, England

Continuation of application Ser. No. 484,240, Sept. 1, 1966. This application Jan. 15, 1969, Ser. No. 796,276
Int. Cl. C14b *1/02, 15/00;* B32b *5/24*
U.S. Cl. 156—68 **18 Claims**



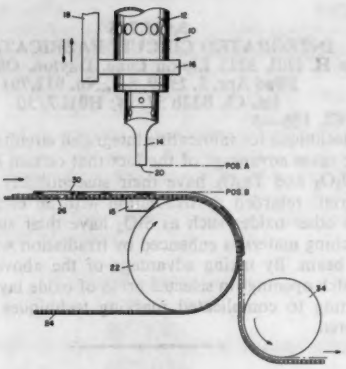
Pile fabrics or porous artificial leather is made utilizing woolled or furred animal skins without detaching the wool or fur from the skins prior to attaching the free ends of the wool or fur to a second base thus resulting in a thicker, fuller more natural appearing product.

3,575,752

NONWOVEN BONDING METHOD

Charles W. Carpenter, Green Acres, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 22, 1968, Ser. No. 731,222
Int. Cl. B29c *27/08;* B32b *31/16*
U.S. Cl. 156—73 **5 Claims**



A self-bonded nonwoven fibrous sheet is made by (1) disposing an at least partially thermoplastic, oriented fibrous material upon a surface in random, multi-directional, overlapping and intersecting arrangement to form a batt or web and (2) imposing a source of sonic energy upon the batt or web to selectively heat and bond the fibrous elements at their points of contact or crossover.

3,575,753

METHOD OF MAKING A LEATHER-LIKE LAMINATED MATERIAL HAVING A POLYVINYL ACETALIC POROUS LAYER

Mitsuru Maruya, Tokyo, and Yoshio Oono and Bunji Fukuda, Ichikawa, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha

No Drawing. Filed Nov. 15, 1968, Ser. No. 776,275
Int. Cl. B32b *5/18*
U.S. Cl. 156—77 **11 Claims**

This invention relates to a new method of making a leathery porous sheet material consisting of a polyvinyl acetalic porous layer and a fibrous base layer.

3,575,754

MANUFACTURE OF THERMOPLASTIC SHEET MATERIAL

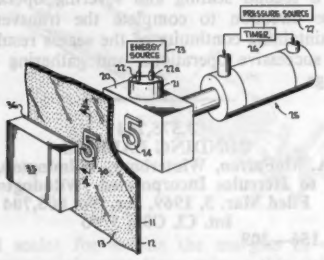
Alan Duerden, Hyde, England, and Samuel Gourley, Saltcoats, Scotland, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of application Ser. No. 255,382, Jan. 31, 1963. This application June 11, 1968, Ser. No. 736,228
Claims priority, application Great Britain, Jan. 31, 1962, 3,689/62
Int. Cl. B32b *5/18, 31/18*
U.S. Cl. 156—79 **11 Claims**

A process for making a thermoplastic sheet which comprises the steps of progressively spreading a paste of a thermoplastic material upon a continuously moving silicone elastomer band having a predetermined surface configuration, heating the paste thereby effecting gelation of said thermoplastic material as an integral sheet and removing the hot sheet from the band. In preference the sheet is provided with a backing material. The process is particularly suited to the manufacture of sheet from pastes based on polymers or vinyl chloride. The paste may be applied on the band in two distinct applications using different pastes for each application. Typically a first layer is formed on the band using a paste which

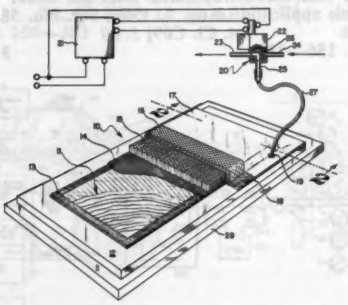
does not include a blowing agent and then a second layer is formed on top of the first layer using a paste which includes a blowing agent. When the double layer is heated the blowing agent decomposes forming a multitude of cells in the second layer and at the same time the first and second layers are gelled. The silicon elastomer band may have a smooth or contoured surface pattern. Also the hot sheet may be embossed immediately after it is removed from the band.

3,575,755
CODE DATING WITH HEAT SHRINKABLE AND PRESSURE FEATURES
Duncan B. Cutler and Nelson R. Henry, Decatur, Ga., assignors to The Woodman Company, Inc., Decatur, Ga.
Filed Sept. 8, 1967, Ser. No. 666,278
Int. Cl. B31f *1/00*
U.S. Cl. 156—85 **13 Claims**



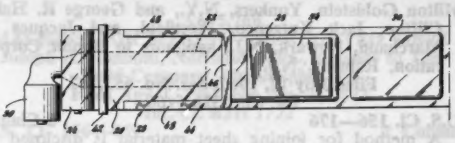
Marking of packaging material utilizing an existing ink layer in the material and an adjacent heat shrinkable layer by applying heat in the form of indicia to cause withdrawal of said layers to allow the different colored base sheet to show through. Also, withdrawal of the ink layer may be by pressure of a raised indicia against a rigid backing to cause said ink layer to be squeezed away, and the heat and pressure is applied to the back side of said base sheet with the rigid backing being Teflon-coated to prevent adherence of said layers.

3,575,756
LAMINATED STRUCTURAL MEMBERS
Louis Maus, Tulsa, Okla., assignor to North American Rockwell Corporation
Filed Oct. 15, 1968, Ser. No. 767,756
Int. Cl. C03c *27/10*; B23b *17/04*
U.S. Cl. 156—103 **7 Claims**



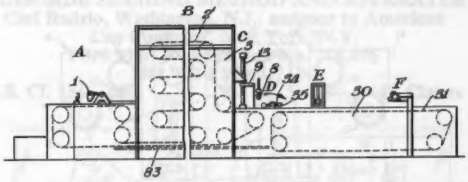
Apparatus and methods are disclosed for vacuum-bag manufacture of thermosetting resin-impregnated fabric layers into forms suitable for structural member applications.

3,575,757
PROCESS FOR MAKING INFLATED ARTICLES
Millard F. Smith, Westport, Conn., assignor to Reinforced Air Corporation, Old Lyme, Conn.
Filed Dec. 8, 1967, Ser. No. 689,155
Int. Cl. B32b *31/00*
U.S. Cl. 156—147 **14 Claims**



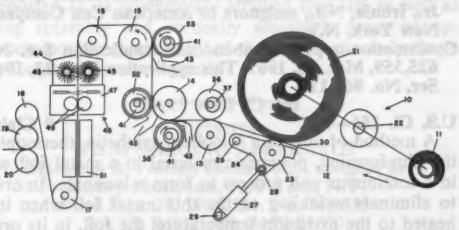
Parallel opposed sheets are bonded together in a U-shaped seal to form a pocket. The pocket is inflated by a controlled amount, then sealed off by forming a new pocket wherein the bottom of the second U-shaped seal overlaps the ends of the first U-shaped seal. The sealed inflated pocket may be further sub-divided into smaller inflated pockets by further sealing.

3,575,758
PROCESS AND ASSEMBLY FOR THE PRODUCTION OF CERAMIC MOLDED ARTICLES
Willy John, Postfach 105, Selb, Germany
Filed July 29, 1966, Ser. No. 568,921
Claims priority, application Germany, July 31, 1965, N 27,115; Feb. 1, 1966, N 27,981
Int. Cl. B28b *5/02, 11/02*
U.S. Cl. 156—153 **11 Claims**



A process and assembly for finishing ceramic molded articles formed on assembly lines includes transferring the articles in a pre-dried state in plaster forms from a drying station to a removal station, depositing the removed articles on a pattern turnover device and then at a polishing station while simultaneously rotating the articles, polishing the rotating articles, applying adhesive thereto, and attaching handles to the articles.

3,575,759
METHOD FOR SPLICING WEBS
Bruno B. Pasquinelli, Evergreen Park, Ill., assignor to Miehle-Goss-Dexter, Incorporated, Chicago, Ill.
Filed Apr. 8, 1968, Ser. No. 719,437
Int. Cl. B65h *19/18*
U.S. Cl. 156—159 **4 Claims**



The invention is directed to a method for splicing relatively thick, cardboard webs wherein a simple overlap splice is first effected whereupon the spliced web is di-

rected through abrading means to thereby reduce the double web thickness of the splice to substantially normal web thickness.

3,575,760

METHOD FOR JOINING FABRIC TO FABRIC USING AN ADHESIVE THREAD

Milton Goldstein, Yonkers, N.Y., and George R. Hair, Clifton, Jack Kutzenco, Westfield, and Jacques J. Marchand, Newark, N.J., assignors to Bondit Corporation, Rahway, N.J.

Filed July 17, 1967, Ser. No. 653,787
Int. Cl. B32b *5/00*
U.S. Cl. 156—176 **8 Claims**

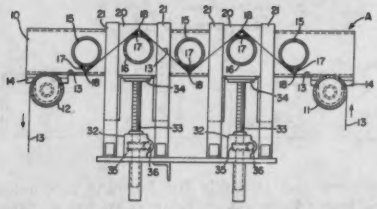
A method for joining sheet material is disclosed in which the material to be joined is fed from supply rolls, a dry monofilament adhesive is interfed between the materials in the area thereof to be joined, the material and the interfed adhesive is then concurrently compressed and subjected to radio frequency heating energy whereby the adhesive melts and covers the sheet areas to be joined. The adhesive hardens as the material advances beyond the vicinity of the radio frequency field and is rewound on a take-up roll.

3,575,761

FLEXING TREATMENT OF TEXTILE CORDS

Owen B. Funsch, Akron, and Grover W. Rye, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 16, 1967, Ser. No. 609,502
Int. Cl. B29h *17/28*
U.S. Cl. 156—199 **9 Claims**



A method and apparatus for treating textile cords formed of thermoplastic fibers such as nylon and polyester and especially the cords used in the manufacture of pneumatic tires where the cords are normally coated with an adhesive and hot-stretched. The treatment includes drawing the cords longitudinally while under tension over an edge or other means to provide a bend in or to flex the cords and reduce their stiffness.

3,575,762

METHOD OF LAMINATING AN EXTRUDED THERMOPLASTIC FILM TO A PREHEATED THIN METAL FOIL WEB

Clifford Clayton Goehring, Princeton, and Arthur C. Hart, Jr., Ironia, N.J., assignors to American Can Company, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 625,359, Mar. 23, 1967. This application Sept. 23, 1969, Ser. No. 867,112
Int. Cl. B29c *19/00*
U.S. Cl. 156—244 **9 Claims**

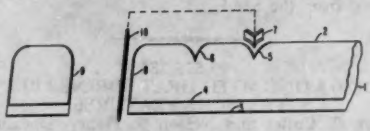
A method of adhering a molten, synthetic, thermoplastic, film-forming, polymeric material to a metal foil web in a continuous web process to form a laminate. In order to eliminate wrinkling of the thin metal foil when it is heated to the extrusion temperature, the foil, in its original coil is preheated and then maintained at approximately the extrustion temperature throughout the laminating process.

3,575,763

METHOD AND APPARATUS FOR FABRICATING HIGH IMPACT STRENGTH, CONTOURED-BOTTOM BAGS

Harold E. Ramsey, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 7, 1967, Ser. No. 688,717
Int. Cl. B32b *31/18*
U.S. Cl. 156—251 **9 Claims**



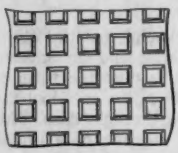
An improved method and apparatus for fabricating high impact strength, contoured bottom bags which comprises advancing a folded heat sealable, thermoplastic web, a first sealing and severing operation by a generally triangularly shaped knife to form contoured bottom corners, a second sealing and severing operation in a transverse direction to complete the transverse seams while maintaining continuity of the seams resulting from the two successive operations, and gathering the fabricated bags.

3,575,764

BONDING FABRICS

Gerald A. McFarren, Winterbury, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 3, 1969, Ser. No. 803,704
Int. Cl. C09j *5/06*
U.S. Cl. 156—309 **7 Claims**



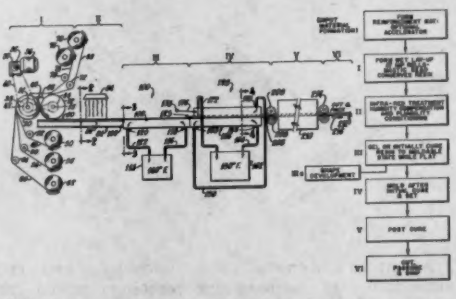
Air-pervious fabric structures can be prepared by bonding the fibers in nonwovens or bonding fabrics to form laminates using as the bonding material oriented thermoplastic films having an overall melt embossed pattern.

3,575,765

PROCESS OF FORMING A SYNTHETIC RESIN PANEL

Ralph H. Sonneborn, Fernando Alvarez de Toledo, and Ronald Z. Bell, Huntingdon, Pa., assignors to Owens-Corning Fiberglas Corporation

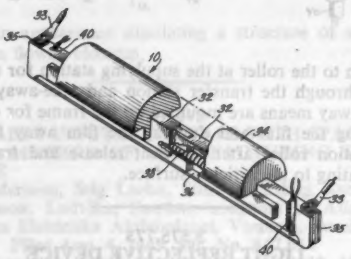
Original application Apr. 4, 1963, Ser. No. 270,727, now Patent No. 3,291,672, dated Dec. 13, 1966. Divided and this application Aug. 9, 1966, Ser. No. 585,215
Int. Cl. C09j *3/00*
U.S. Cl. 156—332 **3 Claims**



Method for producing a thin synthetic resin panel by forming a layer of polymerizable, thermosetting, liquid,

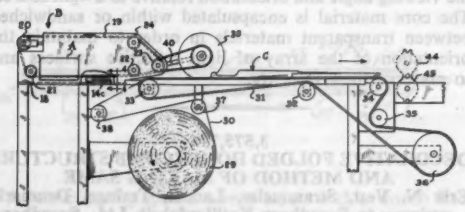
synthetic resin syrup and a fibrous reinforcement mat into a lay-up, then heating the lay-up to a temperature sufficient to initiate polymerization of the resin, withdrawing exothermic heat of polymerization to control rate and degree of polymerization, and simultaneously molding the lay-up to selected cross section.

3,575,766
BAND SEALER FOR CIGARETTE OR FILTER MAKER
Colin Shaw McArthur, Winston-Salem, and Max Norris Baker, Rural Hall, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Oct. 29, 1968, Ser. No. 771,399
Int. Cl. B32b *31/20*
U.S. Cl. 156—359 4 Claims



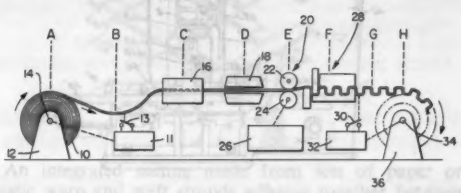
A band sealer for sealing the margins of cigarette wrapper paper or cigarette filters using a thin strip heater element. The sealer comprises a plurality of non-conducting coaxially-interconnected sealer blades with a weighted housing for holding the blades against the wrappers to be sealed, a small and narrow metal heating element connected to and extending across the base of the blades engaging the wrappers and responsive to rapid changes in temperature, a spring urging the blades apart for holding the heating element taut so that it will apply even heat to the wrappers, and a control circuit including thermocouple sensors and an operational amplifier which increases the strength of the signals sent by the thermocouple sensors for maintaining the heating element at a predetermined temperature.

3,575,767
MECHANISM FOR SANITARY NAPKIN PRODUCTION
Charles T. Banks, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Sept. 22, 1967, Ser. No. 669,805
Int. Cl. B32b *31/02*; A61f *13/16*
U.S. Cl. 156—383 4 Claims



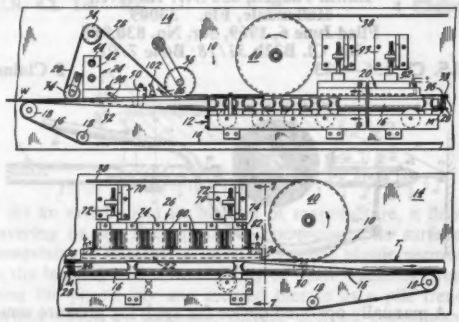
A sanitary napkin making machine including an assembly for stamping out internal napkin pads and for applying them in spaced relation onto a traveling gauze web, an assembly for folding marginal portions of the gauze web over so as to envelope the pads with the web, an assembly for sealing the upper and lower layers of the enveloping gauze web with respect to each other and for simultaneously thrusting side edge portions of the enveloping gauze web toward each other during sealing, and an assembly for transversely cutting the sealed portions of the gauze web so as to form the individual napkins.

3,575,768
MACHINE FOR MAKING CORRUGATED FIBRE
Joseph R. Hannum, Norristown, Pa., assignor to The Budd Company, Philadelphia, Pa.
Filed Apr. 1, 1968, Ser. No. 717,622
Int. Cl. B31f *1/22*
U.S. Cl. 156—459 7 Claims



An article of manufacture comprises a strip of corrugated fibre with the corrugations being substantially square and being formed against the grains which run lengthwise in the fibre. Means and methods for making such corrugated fibre are also provided.

3,575,769
TUBE SIDE SEAMING METHOD AND APPARATUS
Carl Radzio, Washington, N.J., assignor to American Can Company, New York, N.Y.
Filed Mar. 27, 1968, Ser. No. 716,495
Int. Cl. B29d *23/10*
U.S. Cl. 156—466 17 Claims

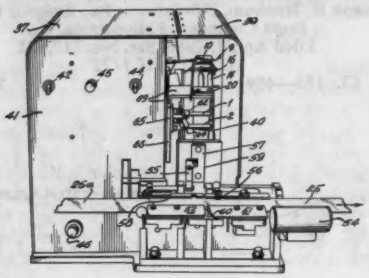


Longitudinal seaming apparatus and method for tubed plastic web material having a floating mandrel for internally supporting the tube during longitudinal seam welding and cooling, wherein the mandrel is magnetically supported at its downstream entubed free end as well as being rotatably and vertically adjustable from its upstream mounting externally of the tube to precisely shape the longitudinal tube seam.

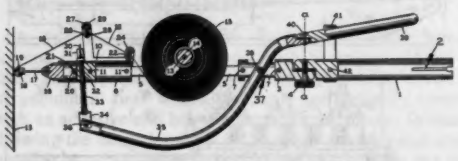
3,575,770
FILM SPLICING APPARATUS
Stanislaw A. Policht, Closter, N.J., assignor to Berkey Photo Inc., New York, N.Y.
Filed Sept. 27, 1968, Ser. No. 763,322
Int. Cl. B31f *5/00*; B65h *21/00*
U.S. Cl. 156—506 10 Claims

A film splicing apparatus is shown for attaching two lengths of undeveloped film in end to end relationship for photographic processing including developing, printing,

etc. A schematic drawing is shown of means to apply a tape patch to the closely adjacent ends of the film. The structure involves a pushing member making contact with the center of the patch and spreading outwardly across the patch as pressure is applied thereto. Upon reaching the end of the patch the wiping mechanism moves back to the center thereby providing a double wiping pressure for the tape patch against the film. The apparatus for severing the tape patch is shown together with linkage means for feeding a predetermined length of tape to a cutter for pick up and transfer to the film. The tape supply roll is shown in a replaceable cartridge incorporating means holding the end of the tape in proper relationship for engagement by the cutter immediately upon the introduction of the cartridge to the splicing apparatus.



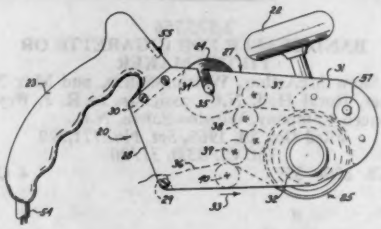
3,575,771
TAPE DISPENSER FOR PLASTERBOARD JUNCTIONS
Edwin Padgett, 630 SW. 7th Ave., Hallandale, Fla. 33009
Filed June 6, 1969, Ser. No. 830,986
Int. Cl. B32b *31/18;* B44c *7/02*
U.S. Cl. 156—523 **5 Claims**



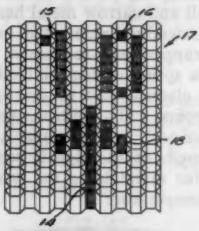
A manually operated device for applying pressure sensitive adhesive reticular tape from a roll retained thereon to the junctions of plasterboard, commonly called wallboard or hard lath, over which a coating of plaster or other coating is applied. The device is adapted for rapid smooth application of the tape over the junctions of lath on the walls, ceilings and corners of a room by manual manipulation of the device.

3,575,772
GILDING MACHINE
Raymond T. Billings, 260 S. Broadway, Yonkers, N.Y. 10706
Continuation-in-part of application Ser. No. 280,035, May 13, 1963. This application Mar. 3, 1966, Ser. No. 531,469
Int. Cl. B44c *1/16, 1/24;* C23c *17/00*
U.S. Cl. 156—540 **9 Claims**

A hand held machine and method of operation for applying a heat releasable coating to the surface of an article from a coating carrying film comprising a frame and an application roller mounted for rotation on said frame and having a heat conducting surface. The roller has a supplying station, a transfer station and a take-away station on the roller. Means are provided for raising the temperature of the heat conducting surface to the coating releasing level and for supplying the coating carrying film to the roller at the supplying station for advancement through the transfer station and take-away station. Take-away means are mounted on the frame for drivingly engaging the film and drawing the film away from the application roller after the heat release and transfer of the coating to the article's surface.



3,575,773
LIGHT REFLECTIVE DEVICE
Louis B. Courtot, 25801 Lake Shore Blvd., Euclid, Ohio 44132
Filed Dec. 28, 1967, Ser. No. 694,166
Int. Cl. B44f *1/00;* B32b *3/12*
U.S. Cl. 161—5 **8 Claims**



A light reflective panel for decorative and informative purposes which is substantially immune to deterioration from natural elements and heavy transverse loading conditions is provided. A core material having selectively colored light reflective surfaces, parallel to the plane of the array, is arranged so that the colored pattern differs and is totally obscured in some direction depending on the viewing angle and orientation relative to a light source. The core material is encapsulated within or sandwiched between transparent materials in order to maintain the orientation of the array of light reflective surfaces and to preserve their integrity.

3,575,774
DECORATIVE FOLDED HONEYCOMB STRUCTURE AND METHOD OF MAKING SAME
Erik N. Vest, Strammelse, Landet, Tasinge, Denmark, assignor to Svendborg Kotillonfabrik Ltd., Svendborg, Denmark, and The Amscan Company, Inc., Harrison, N.Y., fractional part interest to each
Filed Sept. 18, 1968, Ser. No. 760,500
Int. Cl. A41g *1/00*
U.S. Cl. 161—27 **14 Claims**

A plurality of layers of sheet material are combined in a honeycomb structure which can be expanded from

a folded condition and then twisted and compressed at the central portions thereof to provide a decorative object

having an appearance simulating a structure of a plant such as a flower blossom.

3,575,775

WINDABLE INSULATING TAPE WITH SPACERS AND METHOD OF MANUFACTURING SUCH TAPE

Lars Andersson, Stig Larbo, Sture Lindskog, and Otto Johansson, Ludvika, Sweden, assignors to Allmänna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Aug. 4, 1969, Ser. No. 847,014
Claims priority, application Sweden, Aug. 30, 1968, 11,646/68
Int. Cl. H01f *27/32*; B32b *1/04*
U.S. Cl. 161—39 4 Claims

An insulating tape with spacers for forming axial channels in windings of coils for transformers is formed by applying at spaced intervals along a side of a continuous base insulating tape coated with an adhesive rolls of an insulating tape likewise coated on one side with an adhesive and applying heat and pressure. Each roll has a projecting portion also adhesively secured to the main tape.

3,575,776

INFLATABLE FABRIC

John A. MacIntyre, Barrington, R.I., assignor to U.S. Plush Mills, Inc.

Filed Nov. 19, 1968, Ser. No. 777,006
Int. Cl. D03d *1/02*; A45f *1/02*; D06m *17/00*
U.S. Cl. 161—49 3 Claims

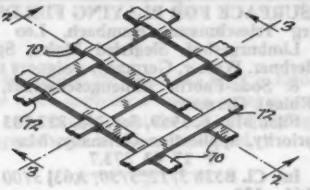
A fabric having spaced woven layers with a woven web extending between the layers and woven into each of the spaced layers with a woven ply between the points of connection of the web to the spaced layers forming in collapsed condition a substantially smooth multi-ply fabric of the same thickness throughout its length and width for ease in uniformly coating the outer surface of the layers.

3,575,777

INTEGRATED PAPER NETTING

Walter F. Allport, Stamford, Conn., assignor to International Paper Company, New York, N.Y.

Continuation-in-part of application Ser. No. 600,899, Dec. 12, 1966. This application Oct. 4, 1968, Ser. No. 777,944
Int. Cl. B32b *3/00, 5/12*
U.S. Cl. 161—57 5 Claims



An integrated netting made from sets of paper or plastic warp and weft strands adhered together between the intersections of the warp and weft strands to form a tough, flexible tear-resistant netting. The netting may be rendered moisture or vapor-proof through the additional lamination of paper or plastic sheet material. Processes and equipment for forming multiple strands and various combinations of warp and weft strands so as to vary the characteristics and properties of the netting are shown.

3,575,778

PILE FABRIC FLOOR COVERING

Roger L. Wilcox, P.O. Box 534, Amagansett, N.Y. 11930

Filed Feb. 16, 1968, Ser. No. 705,976
Int. Cl. D04h *11/00*
U.S. Cl. 161—63 4 Claims

As an article, and its method of manufacture, a floor covering or the like, having a non-woven pile surface, comprising a backing, a layer of flexible plastic secured to the backing and a multiplicity of yarn segments overlying the plastic ply and secured thereto as a pile tread surface cover by adhesion thereto and by embedment therein along spaced lanes of depression formed in the plastic ply, a plurality of yarn segments adjacent to said lanes of depression having ends deflected upwardly to present pile-like tufts.

3,575,779

MEMBRANES AND LAMINATES OF CHLORINATED LINEAR POLYETHYLENE

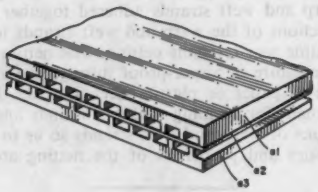
Wilbur F. Chapman, Convent Station, Charles J. Klasen, Dover, and James J. Malone, Jr., Wayne, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 446,091, Apr. 6, 1965. This application June 21, 1967, Ser. No. 650,574
Int. Cl. B32b *17/04*; C08f *29/04*
U.S. Cl. 161—89 7 Claims

Novel plastic membranes and membrane laminates useful in one-ply roofing systems and in similar applications may be prepared from chlorinated linear polyethylene plus filler, stabilizer and pigment. The chlori-

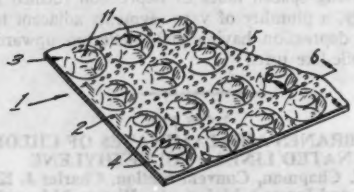
nated linear polyethylene comprises a mixture of two linear polyethylenes of different compositions and the stabilizer is a mixture of 3,4 epoxy-6-methylcyclohexylmethyl 1-3, 4-epoxy-6-methylcyclohexanecarboxylate; 2-6-ditert-butyl-4-methylphenol, and an alcohol selected from the group consisting essentially of sorbitol, pentaerythritol and mixtures thereof.

3,575,780
SURFACE FOR PLAYING FIELDS
Hans-Georg Trieschmann, Hambach, Leo Unterstenhoefer, Limburgerhof, Siegfried Maier, Speyer, and Heinz Berbner, Weiher, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed May 6, 1969, Ser. No. 822,183
Claims priority, application Germany, May 10, 1968, P 17 03 373.7
Int. Cl. B32b *3/12, 3/30;* **A63j** *3/00*
U.S. Cl. 161—123 **1 Claim**



Special surfaces for playing fields comprising an upper layer a_1, a middle layer a_2 and a lower layer a_3, layers a_1 and a_3 consisting of a thermoplastic molding material having a special composition. The layers a_1 and a_3 are webs or boards having parallel ribs on one side, and the layer a_2 is a strip or sheet of steel or plastics material. The ribs on the layers a_1 and a_3 are in contact with the middle layer a_2 and arranged in such a way that they are staggered at equal distances in relation to each other.

3,575,781
PLASTIC FILM WRAPPING MATERIAL
Joseph M. Pezely, Newark, Del., assignor to Stauffer Hoechst Polymer Corporation, Delaware City, Del.
Filed May 16, 1969, Ser. No. 825,254
Int. Cl. B32b *3/30;* **B65d** *65/02, 65/38*
U.S. Cl. 161—131 **12 Claims**

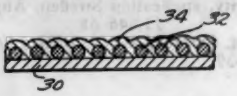


Transparent film wrapping material having hemispherical protuberances spaced thereon is described herein. Each of the protuberances is provided with a plurality of facets thereon to provide ridges therebetween that will disperse a crushing force in several different resultant directions. Thus, the wrapping material absorbs the shock and maintains the item wrapped therein in a safe condition.

3,575,782
ELASTIC SHIRRED WEB PRODUCT
Paul E. Hansen, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 19, 1967, Ser. No. 639,689
Int. Cl. D04h *5/04*
U.S. Cl. 161—141 **10 Claims**

A covering material consists of partially extended spaced aligned elastic yarns sealed between two thin porous gathered non-woven fibrous webs, or between a web and a non-porous film, by means of a soft flexible polymeric coherent binder.

3,575,783
UNIDIRECTIONAL FIBER REINFORCED METAL MATRIX TAPE
Kenneth G. Kreider, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Nov. 13, 1968, Ser. No. 775,246
Int. Cl. D04h *5/00*
U.S. Cl. 161—143 **6 Claims**



A unidirectional fiber-reinforced heterogeneous matrix tape having superior off-axis strength comprising a plurality of high strength, high modulus filaments, a first metal matrix material substantially encasing the filaments and a second metal matrix material of substantially higher strength relative to the first matrix material bonded to and in laminar relation with the filaments and the first matrix material.

3,575,784
BONDED NONWOVEN SHEET
Brian R. Phillips and Richard D. Hutchins, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Feb. 28, 1969, Ser. No. 803,425
Int. Cl. D04h *1/04*
U.S. Cl. 161—150 **2 Claims**

The invention relates to a bonded nonwoven sheet of randomly distributed continuous polyester filaments, said sheet having a net irreversible thermal shrinkage in the lengthwise and widthwise directions of between about 1.2 and 5% when heated to about 170° C. and cooled. The sheet is used as a reinforcing layer in a foamed rubber carpet underlay.

3,575,785
PREFORMED ARCHITECTURAL SURFACE COVERING COMPOSITION
Robert J. McManimie, Des Peres, and Ross M. Hedrick, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of abandoned application Ser. No. 518,019, Jan. 3, 1966. This application Jan. 21, 1969, Ser. No. 792,759
The portion of the term of the patent subsequent to June 6, 1984, has been disclaimed and dedicated to the Public
Int. Cl. B32b *5/16, 19/02;* **C08f** *45/04*
U.S. Cl. 161—162 **28 Claims**

An architectural surface composite, such as a flooring composite, comprising an architectural surface and a pre-

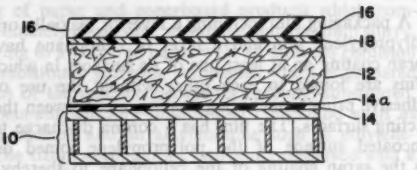
formed resinous covering composition, said composition comprising an inorganic filler and a polyalkyl methacrylate. Also disclosed is a process for covering an architectural surface, such as a floor or wall, with the above-described covering composition.

3,575,786

SHIELD INTERLAYER FOR SPALL SUPPRESSION

Ronald E. Baker, Phoenix, Richard L. Cook, Flagstaff, and Edwin C. Slagel, Phoenix, Ariz., assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 26, 1968, Ser. No. 786,870
Int. Cl. B32b *5/04;* **B64c** *1/12*
U.S. Cl. 161—165 **4 Claims**



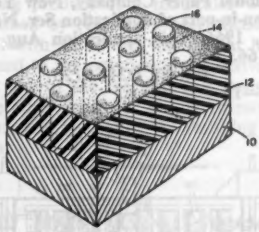
A dual layer composite laminate consisting of ballistic nylon felt with a peripheral seal coat and a urethane elastomer, bonded to the internal surface of a wall, floor, or other part of vehicle structure. The felt side is placed against the structure, to be protected, and the urethane side is exposed. The nylon felt is an efficient fragment catcher, and also provides stand-off which allows the cone of spall to expand and be suppressed instead of following the projectile directly through the wound. The urethane elastomer surface is highly restrictive and tear resistant. It constricts the spall pattern and keeps the felt from spreading excessively as a projectile passes through.

3,575,787

PLASTIC BEARING-BUSHING MATERIAL

Thomas W. Pietrocini, Wickliffe, and Milton L. Selker, Shaker Heights, Ohio, assignors to Clevite Corporation

Filed Jan. 13, 1969, Ser. No. 790,769
Int. Cl. B32b *27/08, 15/02;* **B29d** *31/02*
U.S. Cl. 161—165 **12 Claims**



A steel backed plastic bearing-bushing material having a polyimide bearing surface provided with cavities which are filled with polytetrafluorethylene and a metal bearing phase.

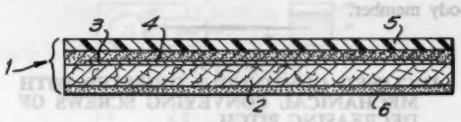
3,575,788

ADHESIVE COATED LABEL WITH A SILICONE RESIN RELEASE COATING APPLIED THERETO

Murray Clifford Funk, Menasha, and Edward Albert Rogalska, Jr., Sherwood, Wis., assignors to American Can Company, New York, N.Y.

Filed Apr. 18, 1968, Ser. No. 722,353
Int. Cl. B32b *7/06;* **C09j** *7/00*
U.S. Cl. 161—167 **1 Claim**

An adhesive coated label includes a coated paper construction having a paper base printed with label's message on one side and coated on the other side with an adhesive. A release coating on the printed surface prevents sticking of the adhesive to the printed side of the label and allows for gathering the label stock into rolls for convenient use. The method by which the label is made includes printing the label, applying a release agent in coated form, curing the release agent and thereafter applying an adhesive coating to the underside of the label.

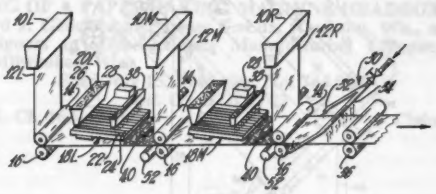


3,575,789

FIBER CERAMIC COMPOSITES AND METHOD OF PRODUCING SAME

August C. Siefert, Granville, and Fred T. Sens, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed Dec. 27, 1966, Ser. No. 604,974
Int. Cl. B32b *3/26, 5/18*
U.S. Cl. 161—193 **19 Claims**



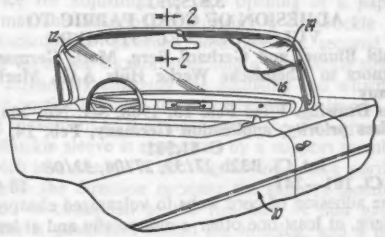
A high temperature resistant structural material comprising first and second ribbons of solid vitreous material having a thickness between approximately 0.001 and 0.005 inch, and a layer of fibers intermediate said ribbons, the ribbons having portions which surround and wet the fibers and which are fused together to unite the ribbons.

3,575,790

FOG RESISTANT GLASS WITH WATER INSOLUBLE POLYVINYL ALCOHOL FILM

Lawrence L. Fleck, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

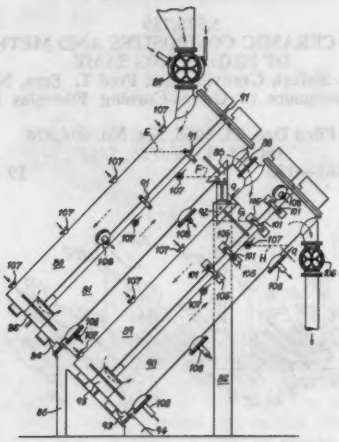
Filed Sept. 15, 1967, Ser. No. 667,982
Int. Cl. B32b *17/10*
U.S. Cl. 161—203 **2 Claims**



A window, lens or other optical device comprised of a transparent body member, such as glass, and a coextensive transparent polyvinyl alcohol based film, wherein

up to about 35% of the hydroxyl groups of the polyvinyl alcohol have reacted with another composition such that the film is substantially water insoluble, applied to a surface of the transparent body member will retard the formation of frost or fog on the coated surface of the body member.

3,575,791
INCLINED CONTINUOUS DIGESTER WITH MECHANICAL CONVEYING SCREWS OF DECREASING PITCH
Hjalmar S. Messing, New York, N.Y., assignor to Mary Agnes Messing, Fort Fairfield, Maine
Filed May 1, 1967, Ser. No. 635,012
Int. Cl. D21c *7/00*
U.S. Cl. 162—236 **11 Claims**



A continuous digester unit comprising parallel spaced inclined tubes positioned one above the other with the lower end portions connected, and the tubes enclosing corresponding conveyor screws constructed to reduce the volume of the material as it moves within the tubes and absorbs liquor for obtaining maximum capacity and smooth flow within a minimum area of floor space. The conveyor screws include spiral flights having a constant uniform outer diameter and a decreasing pitch in the direction of travel of material. The tubes are pivotally supported in their inclined position to permit positioning of the tubes in a horizontal direction when desired.

3,575,792
ADHESION OF CORD FABRIC TO VULCANIZED ELASTOMERS
Harald Blumel and Gerhard Berg, Marl, Germany, assignors to Chemische Werke Hüls A.G., Marl, Germany
No Drawing. Filed Feb. 13, 1968, Ser. No. 704,999
Claims priority, application Germany, Feb. 14, 1967, C 41,501
Int. Cl. B32b *27/32, 27/04, 32/08*
U.S. Cl. 161—241 **10 Claims**

The adhesion of cord webs to vulcanized elastomers of ethylene, at least one other α-monoolefin and at least one polyunsaturated unconjugated olefin by impregnation with resorcinol/formaldehyde latex mixtures is improved when from 0.01–10 parts by weight of poly(conjugated)diolefin, based on 100 parts by weight of said elastomers, is admixed with the elastomers.

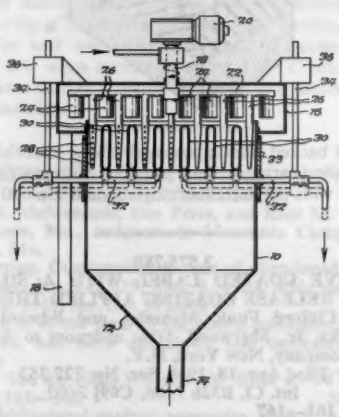
3,575,793
LAMINATE OF POLYPROPYLENE, SARAN AND CELLOPHANE AND METHOD OF MAKING SAME
George C. Paisley, Millbrae, Calif., assignor to Milprint, Inc., Milwaukee, Wis.
Filed Sept. 19, 1968, Ser. No. 760,958
Int. Cl. B32b *27/32, 27/16, 27/08*
U.S. Cl. 161—249 **4 Claims**

A packaging film including a layer of biaxially oriented polypropylene film and a layer of cellophane having a saran coating on at least one of its surfaces in which two films are joined to each other without the use of any adhesive primer, anchoring coating, etc. between the contacting surfaces. The film has a corona discharge treated uncoated surface of the polypropylene joined directly to the saran coating of the cellophane to thereby form the interfacial contact zone between the two films.

3,575,794
STERILE WATER REPELLENT LAMINATED SHEET MATERIAL
Thomas H. Shelley, East Brunswick, and George A. Crowe, Jr., Plainfield, N.J., assignors to Johnson & Johnson
No Drawing. Filed Mar. 8, 1966, Ser. No. 532,598
Int. Cl. B32b *27/10*
U.S. Cl. 161—250 **3 Claims**

A sterile water repellent fibrous laminated sheet material for surgical drapes and the like is disclosed. The adhesive used to bond the sheets together has a saline extraction surface tension greater than 55 dynes/cm. and the finished sheet has a saline repellency of greater than 24 hours.

3,575,795
RAPID HIGH CONSISTENCY BLEACHING WITH CONTINUOUS DIFFUSION
Amiel W. Brinkley, Jr., George G. Nelson, Jr., R. Terry Campbell, and Owen M. Goff, Mobile, Ala., assignors to International Paper Company, New York, N.Y.
Continuation-in-part of application Ser. No. 583,349, Sept. 30, 1966. This application Aug. 14, 1967, Ser. No. 663,920
Int. Cl. D21c *3/26*
U.S. Cl. 162—19 **2 Claims**



A method of rapid bleaching of cellulosic material, such as wood pulp, is provided wherein a high consistency

liquid suspension of cellulosic material is introduced into a vessel, a bleaching solution is introduced into said liquid suspension through a plurality of inlet ducts, moved rapidly relative to the cellulosic material, and the suspension liquid extracted through a plurality of extraction screens.

3,575,796

PAPER SIZING WITH AZIRIDINES

Gerald H. Brown, Lebanon, and Martin M. Skoultchi, Somerset, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed Dec. 7, 1967, Ser. No. 688,683
Int. Cl. D21d *3/00*
U.S. Cl. 162—158 14 Claims

Sizing of paper and paperboard products which comprises intimately dispersing, within the aqueous pulp slurry, or applying to a prepared paper web, an aqueous emulsion of a N-substituted aziridine compound which is prepared by means of the reaction between a carbonyl-substituted, alpha, beta-ethylenically unsaturated compound such as distearyl maleate and an alkylenimine such as ethyleneimine. The sizing agent can be uniformly dispersed with a cationic emulsifier, such as a cationic starch, for better retention on the fibers.

3,575,797

METHOD OF RECOVERING FIBERS AND FILLERS FROM WASTE WATER OF PAPER MACHINES WHEREIN USE IS MADE OF AN ETHER REACTION PRODUCT COMPRISING A POLYAMINE AND A DERIVATIVE OF A POLYOL HAVING AT LEAST TWO CHLOROFORMIC ACID ESTER GROUPS

Wolfgang Lehmann, Leverkusen, Heinz Ziemann, Leichlingen, and Hermann Tretter, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 25, 1967, Ser. No. 633,383
Claims priority, application Germany, Apr. 30, 1966, F 49,081
Int. Cl. D21f *1/66*
U.S. Cl. 162—189 7 Claims

A flotation agent and method for recovering fibers or fillers from waste water by admixing a flotation agent consisting essentially of the amino groups and ether groups-containing product of a molecular weight of at least 2000 obtained by reacting a polyfunctional derivative of a polyol with an amine, which is at least bifunctional with regard to the polyfunctional derivative of the polyol, at least one of the reaction components containing at least one ether group, or a quaternization product thereof; agitating and separating the resulting froth from the waste water.

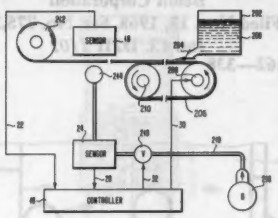
3,575,798

PROCESS FOR MAINTAINING STEAM DRYER PRESSURE BELOW THE MAXIMUM AVAILABLE

Erik B. Dahlin, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 3, 1968, Ser. No. 742,318
Int. Cl. D21f *5/02*
U.S. Cl. 162—198 3 Claims

A method of controlling a physical process, like a paper making machine, is disclosed. The process has at least two variables. The first variable in the process is frequently adjusted. The second variable is less frequently adjusted. The second variable is relatively stable. Setting the relatively stable variable establishes an operating range for the first variable. The measurable production from the physical process is thereby improved and/or increased. In a paper making machine, machine speed is adjusted infrequently in response to the moisture content of paper after a dryer section, to establish an operating range for dryer steam pressure which is below the maximum available steam pressure, the dryer steam pressure



then being adjusted within the range to correct for moisture variations.

ERRATUM

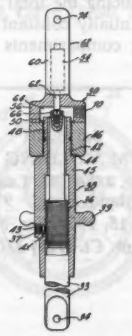
For Class 162—236 see:
Patent No. 3,575,791

3,575,799

APPARATUS FOR ADJUSTING THE SLICE OPENING OF A PAPERMAKING MACHINE HEADBOX

Fred J. Gedemer and James F. Lux, Appleton, Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed July 15, 1968, Ser. No. 744,996
Int. Cl. D21f *1/02*
U.S. Cl. 162—263 7 Claims



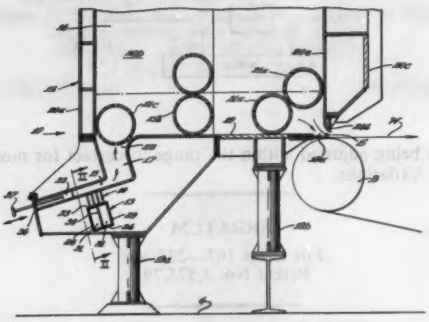
A device for adjusting the slice opening of a papermaking machine headbox, comprising a turnbuckle assembly including a threaded adjusting rod secured to the upper lip of the slice opening and a turnbuckle sleeve member threadedly engaging the adjusting rod which is rotated to vertically move the adjusting rod to impart an adjusting movement to the upper lip of the slice opening. The turnbuckle sleeve is supported by a support member upon which is connected a housing having a neck portion extending in the direction opposite the support member, and which is connected to the headbox. A dial gauge micrometer is positioned within the housing, and a projecting stem from the micrometer engages the end of the adjusting rod opposite the end connected to the slice lip to visually indicated the degree of adjusting movement imparted to the slice lip resulting from turnbuckle sleeve rotation.

3,575,800

MULTIPLE GALLONAGE HEADER FOR PAPER MACHINE HEADBOX

Ralph A. Beck, Beloit, Wis., assignor to Beloit Corporation

Filed Nov. 13, 1968, Ser. No. 775,302
Int. Cl. D21f *1/02*
U.S. Cl. 162—338 8 Claims



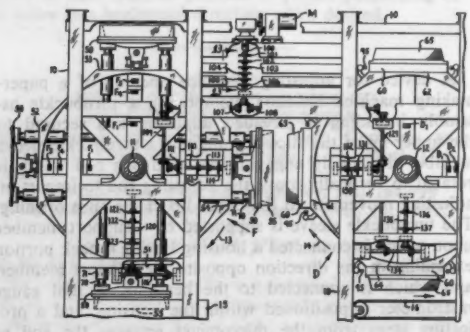
A stock supply and distribution system for the headbox or stock inlet box of a papermaking machine including a stock supply header which extends and which is internally compartmentalized across the width of the headbox, and plural groups of narrow risers which communicate respectively the various compartments of the stock supply header with the stock inlet box. A block valve is provided for selectviely shutting off flow through any of the groups of risers thereby reducing the total stock flow rate while maintaining a substantially constant rate of flow through the opening flowing compartments and risers.

3,575,801

DUO DRUM MOLDING MACHINE

Paul D. Friday, 4480 SW. Laurelwood Drive, Portland, Oreg. 97225

Filed July 15, 1968, Ser. No. 744,964
Int. Cl. D21j *3/00*
U.S. Cl. 162—389 13 Claims



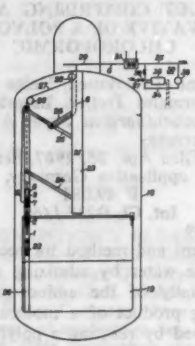
The machine comprises a forming drum and a drying drum, both rotatable in unison in 90° step-by-step movement. Four sides of the forming drum are equipped with forming dies and four sides of the drying drum are equipped with heated drying dies. The forming dies are mounted for radial reciprocation. At a pick-up station the forming dies are projected downward into a furnish tank beneath the forming drum and then retracted. During three-quarters of a revolution the forming dies are under suction to remove water from the pre-forms. Then, at a transfer station, the forming dies are projected horizontally to transfer the pre-forms to drying dies on the drying drum, and then retracted. After three-quarters of a revolution on the drying drum, the dried articles are blown off the drying dies to a conveyor belt at a discharge station beneath the drying drum.

3,575,802

NUCLEAR REACTOR HAVING A RUPTURE DETECTING SYSTEM

Hendrik Gelius, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Continuation-in-part of application Ser. No. 499,405, Oct. 21, 1965. This application Mar. 13, 1968, Ser. No. 712,692
Claims priority, application Sweden, Dec. 16, 1964, 15,195/64
Int. Cl. G21c *17/04*
U.S. Cl. 176—19 6 Claims



A device for detecting faults in a nuclear reactor by analyzing samples of the reactor cooling medium has a movable sampling member situated inside the reactor vessel and connectible to the fuel elements one by one and a sampling conduit connected between the sampling member and a monitoring system situated outside the reactor vessel.

3,575,803

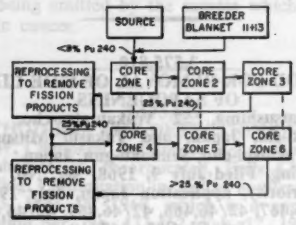
REACTOR FUELING METHOD

Paul Greebler, San Jose, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission

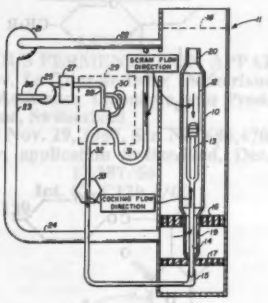
Filed Aug. 8, 1968, Ser. No. 751,100
Int. Cl. G21c *19/20*
U.S. Cl. 176—30 8 Claims

A refueling method for a fast neutron sodium-cooled nuclear breeder reactor system which involves positioning fuel elements containing fissile fuel having a Pu-240 isotope content greater than 25% adjacent the breeder blanket at the core periphery and placing fuel elements having a Pu-240 isotope content less than 8% near the

central region of the core. The result is a lowering of the positive coolant void reactivity in the central region. New fuel placed near the center core region is shuffled to the core periphery in an organized manner.



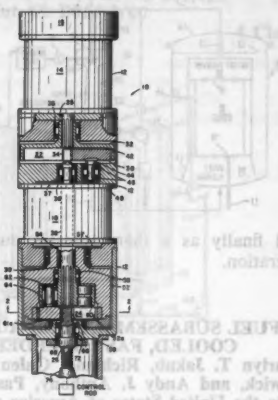
3,575,804
ELECTROMAGNETIC FLUID VALVE
Charles C. Ripley, San Jose, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed July 24, 1968, Ser. No. 747,160
The portion of the term of the patent subsequent to Dec. 30, 1986, has been disclaimed
Int. Cl. F15c *1/04, 4/00*
U.S. Cl. 176—36 **5 Claims**



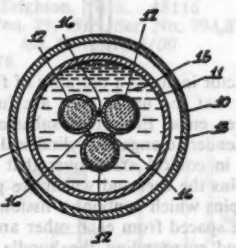
A hydraulically actuated control rod drive system for a nuclear reactor. The system utilizes an electrically conductive fluid and comprises basically electromagnetic fluid valve means having an input, two outputs and a continuous flowing primary fluid including control signal means using an electrically conductive secondary fluid for switching the primary fluid from one output to the other and flow control means including an electromagnetic induction throttle for controlling the flow of the secondary fluid in said control signal means.

3,575,805
NUCLEAR REACTOR CONTROL ROD DRIVE ASSEMBLY
John D. Dempsey, Lynchburg, Va., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Dec. 18, 1968, Ser. No. 784,679
Int. Cl. F16h *37/06*; G21c *7/08*
U.S. Cl. 176—36 **3 Claims**

A control rod drive assembly for a nuclear reactor utilizing a planetary gear system and a pair of motor drive units in continuous operation. Speed adjustments of one motor unit causes control rod movement for purpose of reactor control. Braking of said motor unit provides rapid rod insertion while a flywheel built into the planetary gear system provides rapid rod insertion in the event both motor units fail.



3,575,806
HYDRIDING RESISTANT ZIRCONIUM ALLOY COMPONENTS
John Boulton, Pinawa, Manitoba, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada
Filed Nov. 24, 1967, Ser. No. 685,534
Int. Cl. G21c *15/00, 19/28*
U.S. Cl. 176—50 **3 Claims**

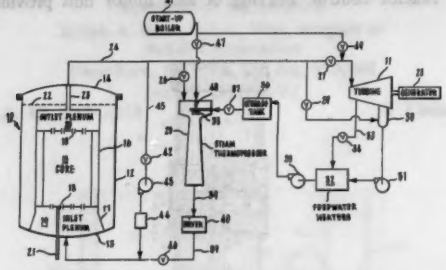


Nuclear reactor components in an organic coolant circuit formed from a zirconium alloy containing 0.1 to 0.3% Sn, 0.05 to 0.2% Fe, 0.05 to 0.2% Ni, 0.05 to 0.2% Nb by weight with the remainder zirconium, which alloy exhibits a high resistance to hydriding when exposed to a hydriding atmosphere such as provided by organic coolant.

3,575,807
STEAM COOLED REACTOR OPERATION
Charles C. Ripley, San Jose, Calif., assignor to General Electric Company
Filed Jan. 29, 1968, Ser. No. 701,229
Int. Cl. G21c *15/24*
U.S. Cl. 176—56 **9 Claims**

A steam circulating system for a steam cooled nuclear reactor is disclosed. This system includes a start-up technique in which a steam thermopresser acts first as a con-

tact condenser while the reactor is preheating then as a jet pump while the reactor coolant circulation is initiated,



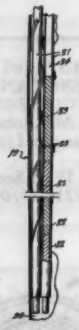
and finally as a thermopresser during normal reactor operation.

3,575,808

FUEL SUBASSEMBLY FOR A LIQUID-METAL-COOLED, FAST BREEDER REACTOR

Marlyn T. Jakub, Richland, Galen M. Hesson, Kennewick, and Andy J. Anthony, Pasco, Wash., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 21, 1969, Ser. No. 809,324
Int. Cl. G21c *3/03*
U.S. Cl. 176—78 **6 Claims**



A fast reactor includes a plurality of fuel subassemblies arranged so that the upper ends are further apart than are the lower ends. Each fuel subassembly includes a bundle of slender, elongated cylindrical fuel pins which are inclined in conical array over that part of the pins which contains the fuel and which are parallel over that part of the pins which contains a fission-gas plenum. The fuel pins are spaced from each other and from the walls of the shroud surrounding the bundle of fuel pins by spacer wires which are of gradually increasing cross section from the bottom to the top of that part of the fuel pin containing the fuel and are of uniform cross section over that portion of the fuel pin containing the fission-gas plenums.

3,575,809

METHOD OF PRODUCING GUANOSINE BY FERMENTATION

Teruo Shiro, Shinpachi Konishi, Yoshio Tamagawa, and Tetsuo Maruyama, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 521,403, Jan. 18, 1966. This application Feb. 27, 1969, Ser. No. 803,052
Claims priority, application Japan, Jan. 18, 1965, 40/2,427
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 **2 Claims**

Mutants of *Bacillus subtilis* which require adenine, do not require xanthine nor guanine, and produce inosine together with minor amounts of guanosine, if any, can be made resistant to 8-azaguanine, and such modified mutants produce useful amounts of guanosine with only minor amounts of inosine.

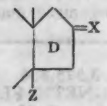
3,575,810

METHOD FOR REMOVAL OF SIDE CHAIN OF SAPOGENINS

Takashi Matsushima, 52 Wakamatsu-cho, Santanda, Amagasaki-shi, Japan, and Takashi Mitsugi, 697–9 Tonoki, Takaishi-cho, Senboku-gun, Japan

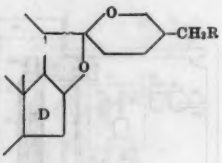
No Drawing. Filed July 9, 1968, Ser. No. 743,274
Claims priority, application Japan, July 19, 1967, 42/46,467, 42/46,468, 42/46,469, 42/46,470
Int. Cl. C07c *167/18*
U.S. Cl. 195—51 **8 Claims**

Androstane derivatives wherein the D-ring is as follows:

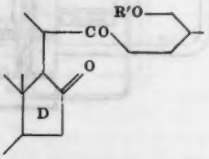


X being =O or

Z being H or OH; configuration of Z is either α or β, are obtained by the removal of the side chain of a steroidal sapogenin or its derivatives of the partial formula:



or



wherein R is H or OR′ group; R′ is H or an acyl group, by the action of a microorganism of the Gymnoascus, Scopulariopsis, Hypomyces and Dendrostilbella genus. The androstane derivatives are useful as intermediates for preparing a wide variety of androstane and estrane compounds including testosterone, estrone, estradiol, etc. in per se known manner.

3,575,811

METHOD FOR THE DETECTION OF CANCER

Emmett W. Chappelle, Baltimore, and Gilbert V. Levin, Chevy Chase, Md., assignors to Hazleton Laboratories, Incorporated, Falls Church, Va.

No Drawing. Continuation of application Ser. No. 433,461, Feb. 17, 1965. This application Oct. 23, 1968, Ser. No. 770,906
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 **4 Claims**

A method is provided for determining whether cancer is present in a tissue. This method makes use of the bioluminescent reaction between ATP and firefly lantern

extract and measuring the amount of light which is emitted. A comparison is made between cells taken from the subject which are known to be noncancerous and the cells which are thought to be cancerous. The presence of cancer is indicated by a significantly lesser amount of light being emitted by the sample which is suspected to contain cancer.

3,575,812

METHOD FOR THE DETECTION OF VIRUS

Emmett W. Chappelle, Baltimore, Md., assignor to Hazleton Laboratories, Incorporated, Falls Church, Va.

No Drawing. Continuation-in-part of application Ser. No. 739,913, June 18, 1968, which is a continuation of application Ser. No. 433,462, Feb. 17, 1965. This application Nov. 7, 1968, Ser. No. 774,194

Int. Cl. C12k *1/04*

U.S. Cl. 195—103.5 10 Claims

The presence or absence of virus may be detected by inoculating a tissue culture, which is an appropriate host for the suspected virus, with a sample of the material suspected to contain a virus and then comparing the amount of adenosine triphosphate in the culture before and after a period of incubation. The adenosine triphosphate content of the inoculated tissue culture is determined by reacting the tissue culture with a mixture comprising luciferin, luciferase, and a cation in the presence of oxygen and monitoring the amount of bioluminescence given off thereby. A significant change in the amount of bioluminescene after incubation indicates the presence of virus, whereas the absence of virus is indicated by no significant change.

3,575,813

CONTINUOUS FERMENTATION APPARATUS

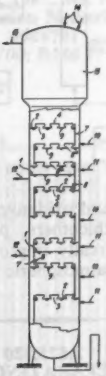
Willy Rothmayr, La Tour-de-Peilz, Switzerland, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Nov. 29, 1967, Ser. No. 686,470

Claims priority, application Switzerland, Dec. 1, 1966, 17,187/66

Int. Cl. C12b *1/00*

U.S. Cl. 195—139 4 Claims



A continuous method and apparatus for fermenting medium in thin layers on superposed plates in a column, pass air countercurrently and uniformly through the thin layers and means for varying the temperature of the thin layers of the medium.

3,575,814

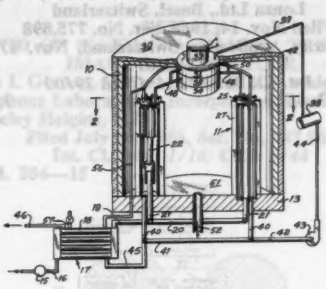
VAPORIZATION APPARATUS WITH FILMING AND COMPRESSION MEANS

Harry H. Bahrenburg, 11 Sherman Court, Bethpage, N.Y. 11714

Filed Feb. 24, 1969, Ser. No. 801,415

Int. Cl. B01d *3/00*

U.S. Cl. 202—172 4 Claims



This invention relates to an apparatus used, for example, for recovering fresh potable water from saline water, such as sea water. The apparatus includes a vapor compressor to obtain a condensation temperature slightly higher than the boiling point of water. The compressed vapors are conducted into a plurality of finned vertically disposed tower cells over the surface of which the sea water falls as a thin film to produce a large amount of water vapors. The apparatus also includes a single large container in which the finned vaporization cells are disposed.

3,575,815

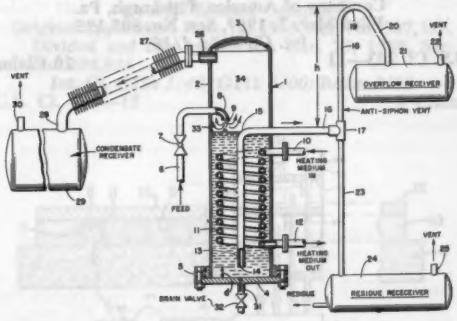
APPARATUS FOR THE DISTILLATION PURIFICATION OF DIPHENYL COMPOUNDS

Charles E. Sech, 5993 Winans Lake Road, Brighton, Mich. 48116

Filed Jan. 29, 1969, Ser. No. 794,879

Int. Cl. B01d *3/00*

U.S. Cl. 202—176 10 Claims



A single stage non-externally refluxed still especially designed for the distillation purification of heat transfer fluids such as diphenyl, diphenyl ether and mixtures thereof which are contaminated with high boiling thermal decomposition products. Principal features include: an internal helical heating coil; an internal wellpipe for withdrawal of liquid bottoms as well as continuous scavenging of particulate solids; and anti-siphon protection. The

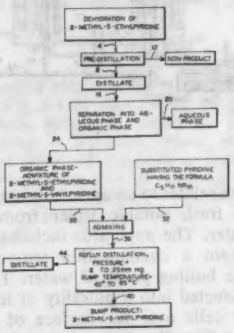
apparatus embodies a compact design and affords positive inventory control without need for liquid level instrumentation.

3,575,816

NOVEL PROCESS FOR RECOVERY OF 2-METHYL-5-VINYLPYRIDINE FROM MIXTURES WITH 2-METHYL-5-ETHYLPYRIDINE

Gerhart Schreiner, Visp, Valais, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

Filed Nov. 14, 1968, Ser. No. 775,898
Claims priority, application Switzerland, Nov. 17, 1967, 16,162/67
Int. Cl. B01d *3/34*; C07d *29/00*
U.S. Cl. 203—8 7 Claims



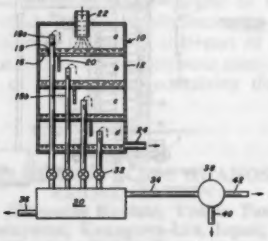
A process for recovering 2-methyl-5-vinylpyridine from mixtures containing 2-methyl-5-vinylpyridine and 2-methyl-5-ethylpyridine comprises vacuum distillation of mixtures containing the above compounds in the presence of a pyridine corresponding to the formula $C_5H_nNR_m$ wherein n is 3 or 4, m one or 2 and R is methyl or ethyl.

3,575,817

MULTIEFFECT DISTILLATION PROCESS AND SYSTEM WITH DOWNWARD REMOVAL OF VAPOR

Melvin H. Brown, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 7, 1969, Ser. No. 805,195
Int. Cl. B01d *3/10*
U.S. Cl. 203—11 10 Claims



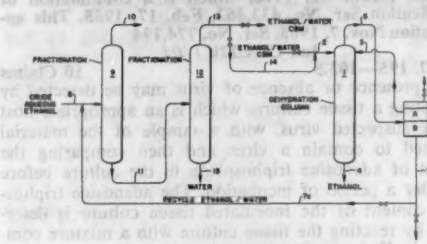
A portion of an impure liquid is evaporated and the vapor condensed to provide a purified liquid product such as purified water. Evaporation is effected by a process employing a plurality of evaporate zones. According to the new arrangements, evaporation is effected in a plurality of zones and the vapor removed downwardly through elongate chambers. A downwardly decreasing thermal gradient is established in the unevaporated liquid by properly controlling the pressures in the evaporative zones. Heat is removed from the vapor as it is moved downwardly through this temperature gradient.

3,575,818

MANUFACTURE OF ABSOLUTE ETHANOL USING PENTANE AS AZEOTROPING AGENT

Frank B. West, Berkeley, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Feb. 3, 1969, Ser. No. 795,812
Int. Cl. C07c *29/26*
U.S. Cl. 203—19 2 Claims



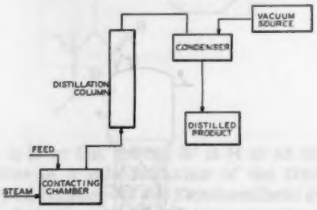
Ethanol-water mixtures are dehydrated by azeotropic distillation in the presence of pentane.

3,575,819

STEAM DISTILLATION OF POLYPHENYL THIOETHERS UNDER REDUCED PRESSURE WITH OR WITHOUT ALUMINA TREATMENT

Charles W. Ross, Belleville, and Dario R. Cova, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

Original application June 21, 1960, Ser. No. 559,127. Divided and this application Jan. 5, 1970, Ser. No. 581
Int. Cl. B01d *3/10*; C07c *149/02*
U.S. Cl. 203—29 6 Claims



The corrosiveness and oxidative stability of polyphenyl ethers, polyphenyl thioethers, phenoxy biphenyls and mixtures thereof is greatly improved by subjecting such compounds to a subatmospheric pressure distillation in the presence of steam.

3,575,820

PROCESS FOR SEPARATING ORTHO-ISOMERS FROM DIISOCYANATE MIXTURES BY DISTILLATION WITH ALUMINUM OXIDE

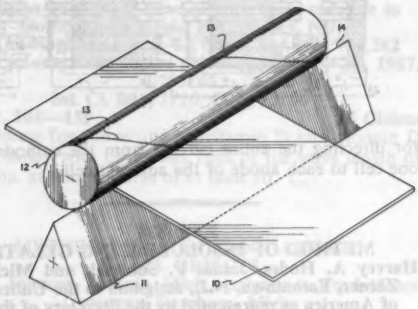
Wilhelm J. Schnabel, Branford, and Ehrenfried H. Kober, Hamden, Conn., assignors to Olin Corporation

No Drawing. Filed Nov. 22, 1968, Ser. No. 778,344
Int. Cl. B01d *3/34*; C07c *69/00*
U.S. Cl. 203—30 4 Claims

Removal of ortho-isomers from tolylene diisocyanate mixtures is effected by incorporating aluminum oxide with

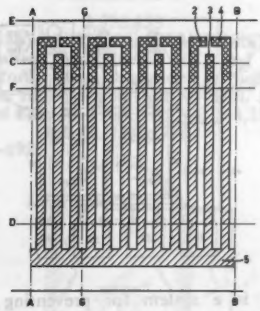
said mixtures and subsequently distilling to recover non-vicinal tolylene diisocyanate. The aluminum oxide functions as a selective polymerization catalyst for the ortho-isomers, which polymerize to solid, non-distillable polymers.

3,575,821
ELECTROLYTIC RECORDING MEDIUM
Arthur S. Diamond, Palos Verdes Peninsula, and James F. Komerska, Carson, Calif., assignors to Hogan Faximile Corporation, Los Angeles, Calif.
Filed July 5, 1968, Ser. No. 742,644
Int. Cl. B21h *1/20*
U.S. Cl. 204—2 **13 Claims**



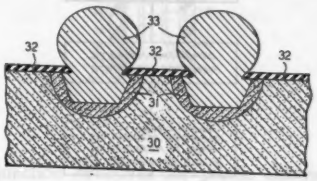
An electrolytic recording medium comprising a sheet of paper impregnated with 25 to 50% by weight of an electrolytically conducting solution containing a marking compound such as ascorbic acid, erythorbic acid or sodium sulfoxylate, and from 0.05 to 25% by weight of an N-alkylol amine-aldehyde addition product. Suitable addition products are methylolureas and hexamethylolmelamine.

3,575,822
METHOD OF MANUFACTURING MINIATURIZED ELECTRIC CIRCUITS
Pol Jean Limbourg, Lillois-Witterzeel, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.
Filed June 20, 1967, Ser. No. 647,466
Claims priority, application Netherlands, June 23, 1966, 6608701
Int. Cl. B23p *17/00*; B44d *1/18*; C23b *5/48*
U.S. Cl. 204—15 **17 Claims**



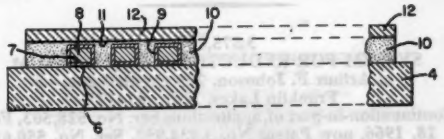
A method of mass producing miniaturized electrical circuits provided with supply conductors. A first conductive layer is deposited on a plate carrier to form an electrode pattern; a second conductive layer is deposited over the carrier and electrode pattern and etched to form a supply conductor pattern, subsequently the conductor pattern is reinforced electrolytically and then the carrier is separated from these portions of second layer thus forming the supply conductors.

3,575,823
METHOD OF MAKING A SILICON TARGET FOR IMAGE STORAGE TUBE
Eugene I. Gordon, Convent Station, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed July 26, 1968, Ser. No. 747,866
Int. Cl. B44d *1/18*; C23b *5/48*
U.S. Cl. 204—15 **1 Claim**



The specification describes a technique for improving the diode-array image storage tube described in application Ser. No. 605,715 and now Pat. No. 3,403,284. Conductive islands are deposited over each diode to minimize adverse charge storage effects on the insulator isolating the diodes. Precise registration of the island on the diode regions is obtained by selective preferential deposition on the realtively conductive diode regions. This can be done by electrodeposition or electroless plating.

3,575,824
METHOD OF MAKING A THIN MAGNETIC FILM STORAGE DEVICE
John E. Eide, Syracuse, N.Y., assignor to General Electric Company
Original application Nov. 12, 1965, Ser. No. 507,357. Divided and this application Dec. 23, 1968, Ser. No. 804,034
Int. Cl. C23b *5/48*; G11b *5/00*; B41m *3/08*
U.S. Cl. 204—15 **3 Claims**



The invention relates to a method of fabricating thin magnetic film storage devices and more specifically to the making of thin magnetic film storage devices in a matrix structure wherein each storage element has a closed flux path.

A first plurality of parallel conductors is formed by depositing a conducting layer upon a layer of magnetic film earlier deposited on a base plate and the two are etched

into parallel strips. This is followed by the electrodeposition of a magnetic film about these conductors to form a closed magnetic flux path about the individual strips.

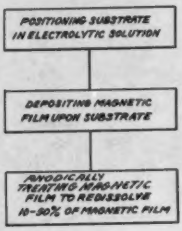
After laying down an insulating layer, a second plurality of parallel conductors is arranged over the first plurality of conductors and orthogonal thereto.

3,575,825

METHOD OF INCREASING THE COERCIVE FORCE OF COBALT-TUNGSTEN FILMS BY ANODIC TREATMENT

Raymond E. Skoda, Schenectady, N.Y., assignor to General Electric Company

Filed Jan. 12, 1968, Ser. No. 697,349
Int. Cl. C23f *17/00*
U.S. Cl. 204—35 **5 Claims**


POSITIONING SUBSTRATE IN ELECTROLYTIC SOLUTION
DEPOSITING MAGNETIC FILM UPON SUBSTRATE
ANODICALLY TREATING MAGNETIC FILM TO REDISSOLVE 10-50% OF MAGNETIC FILM

The coercive force of a thin magnetic film of CoW is increased by approximately 100 oersteds for a given film thickness by positioning the magnetic film within the electrolytic solution employed to originally plate the film and anodically dissolving from 10–50% of the magnetic film into the solution.

3,575,826

METHOD AND COMPOSITION FOR ELECTROPLATING TIN

Kenneth P. Bellinger, Rockville, and Joseph F. Conoby, Somers, Conn., assignors to Conversion Chemical Corporation, Rockville, Conn.

No Drawing. Filed Oct. 16, 1968, Ser. No. 768,181
Int. Cl. C23b *5/14, 5/46*
U.S. Cl. 204—54 **21 Claims**

An aqueous bath for electroplating tin upon metal surfaces contains stannous ion, sulfate radical, a surface-active sulfated polyoxyalkyl carbinamine and an imidazoline derivative. The bath has a hydrogen ion concentration of about 0.9 to 4.1 grams per liter, and it operates effectively over a wide range of current densities to produce desirable deposits at relatively high plating rates.

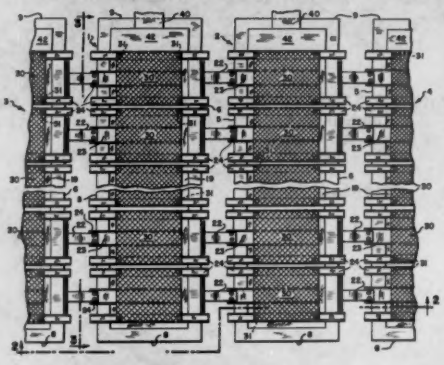
3,575,827

SYSTEM FOR REDUCTION OF ALUMINUM

Arthur F. Johnson, 203 Creole Lane, Franklin Lakes, N.J. 07417

Continuation-in-part of applications Ser. No. 528,503, Feb. 18, 1966, now Patent No. 3,434,957, Ser. No. 550,653, May 17, 1966, now Patent No. 3,501,386, Ser. No. 607,330, Jan. 4, 1967, now Patent No. 3,434,958, and Ser. No. 614,294, Feb. 6, 1967, now Patent No. 3,470,075. This application Dec. 6, 1967, Ser. No. 688,578
Int. Cl. C22d *3/12, 3/02;* B01k *3/00*
U.S. Cl. 204—67 **16 Claims**

A system for electrolytic reduction of aluminum, the system including a plurality of adjacent cells for effecting the electrolytic reduction of aluminum in which the cells are connected in line and each cell includes a cathode and a plurality of anodes with the cathode of one cell electrically connected to each anode of the next adjacent cell



for directing the entire current from the cathode of the one cell to each anode of the adjacent cell.

3,575,828

METHOD OF INSOLUBILIZING GELATIN

Harvey A. Hodes, James F. Sobieski, and Michael C. Zerner, Eatontown, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Mar. 1, 1968, Ser. No. 709,827
Int. Cl. B01k *1/00*
U.S. Cl. 204—131 **1 Claim**

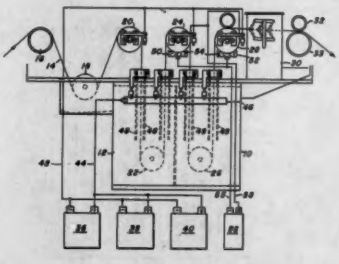
An aqueous electrically conductive gelatin-containing solution is coated onto a first electrically conductive support or anode. The solution is allowed to gel and set. Then, a second electrically conductive support or cathode is brought into contact with the gel to form a sandwich. Passing a current through the gelatin-containing layer causes the gelatin to insolubilize on the first electrically conductive support; the degree of insolubilization being proportional to the amount of current passed.

3,575,829

SYSTEM FOR CLEANING CONTACT ROLLS IN A PLATING TANK

Robert A. Germain, North Madison, Ohio, and James B. Murtland, Jr., Natrona Heights, Pa., assignors to Allegheny Ludlum Steel Corporation, Brackenridge, Pa.

Filed Aug. 14, 1968, Ser. No. 752,521
Int. Cl. C23b *1/00, 3/02*
U.S. Cl. 204—141 **3 Claims**



Described is a system for preventing the build-up of a coating on contact rolls over which strip material passes in an electrolytic coating process. This is accomplished by a process of de-plating wherein the coating is removed electrolytically from the contact rolls by a reverse current and deposited in an easily cleaned pan.

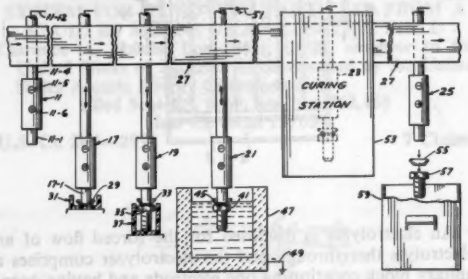
3,575,830
BETA-CHLORINATION OF ALPHA HYDROXY-ISOBUTYRIC ACID
Richard W. Hein, Ridgefield, and Herman A. Bruson, Woodbridge, Conn., assignors to Escambia Chemical Corporation, Pace, Fla.
No Drawing. Filed July 5, 1968, Ser. No. 742,534
Int. Cl. B01j 1/10
U.S. Cl. 204—158 6 Claims

A process for the beta-chlorination of α-hydroxyisobutyric acid by treating it with chlorine gas in the presence of light.

3,575,831
PROCESS FOR THE PRODUCTION OF VITAMIN D
Karlheinz Pfoertner, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed May 22, 1968, Ser. No. 731,262
Claims priority, application Switzerland, May 31, 1967, 7,703/67
Int. Cl. B01j 1/10; C07g 13/00
U.S. Cl. 204—159 16 Claims

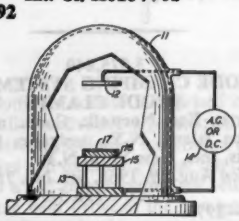
A process for converting provitamin D into vitamin D by irradiation with ultraviolet light of the wave length of 253.7 mμ. at temperatures of at least 50° C.

3,575,832
METHOD FOR ELECTROCOATING SMALL OBJECTS
Olin B. Johnson, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed June 3, 1968, Ser. No. 733,916
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 4 Claims



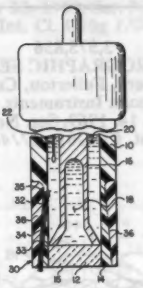
Method for electrodepositing paint upon small, ferromagnetic objects which includes supporting the workpiece throughout coating and curing with electromagnetic support means and impressing the coating voltage via the magnetic connection.

3,575,833
HAFNIUM NITRIDE FILM RESISTOR
Dieter Gerstenberg, Morristown, N.J., and Frank T. J. Smith, Bedford, Mass., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 26, 1968, Ser. No. 708,159
Int. Cl. H01c 7/02
U.S. Cl. 204—192 2 Claims



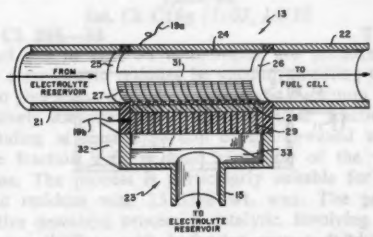
Hafnium nitride thin film resistors are obtained by sputtering hafnium in the presence of nitrogen maintained at partial pressures within the range of 10^{-4}–10^{-2} torr.

3,575,834
LIQUID JUNCTION STRUCTURE FOR PLASTIC ELECTROCHEMICAL ELECTRODES
Duane W. Hoole, Huntington Beach, Gerald L. Klein, Orange, and Terry R. Vivian, Garden Grove, Calif., assignors to Beckman Instruments, Inc.
Filed Apr. 12, 1968, Ser. No. 720,802
Int. Cl. G01n 27/46
U.S. Cl. 204—195 4 Claims



Liquid junction structures for plastic electrochemical electrodes and methods of manufacturing the same are disclosed. One embodiment comprises a tube of plastic having an open end with an ion sensitive structure mounted therein. A small longitudinal channel is formed in the tube which extends from the open end past the membrane to open into the interior of the tube. A bundle of fibers is positioned in the channel covered by a sleeve of injection molded plastic for compacting and restraining the fibers. The embodiment enables a planar sensing surface for a plastic combination electrode. Another embodiment comprises a tube having an extended lip portion surrounding an opening and a shrink tube surrounding the lip portion. A bundle of fibers is positioned in the opening; thereafter the lip portion and the shrink tube are heated to melt and contract the lip portion and the shrink tube respectively about the fibers.

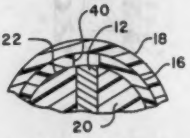
3,575,835
HYDRAZINE SENSOR
Robert E. Smith and Herman B. Urbach, Annapolis, Md., assignors to the United States of America as represented by the Secretary of the Navy
Filed Oct. 28, 1968, Ser. No. 771,086
Int. Cl. G01n 27/46
U.S. Cl. 204—195 7 Claims



A sensing cell for determining the fuel content of an electrolyte for a fuel cell, which is constructed to be mounted as a section in the feed conduit of the fuel cell. It is constructed with the cathode as a portion of one wall

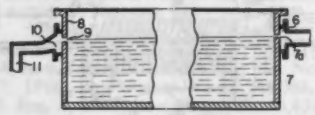
of the conduit and with a larger-pore membrane as another part of the conduit wall. Mounted outside the conduit and adjacent the membrane is a porous anode which is enclosed in a chamber having attached thereto a return conduit to carry the electrolyte which passes through the membrane and the anode back to the electrolyte reservoir. The chamber is not filled with fluid but provides a space to receive the gas generated in the sensor cell, which gas then passes out through the run-off pipe. The system may be open or closed depending upon the specific application.

3,575,836
POLAROGRAPHIC SENSOR
James C. Sternberg, Fullerton, Calif., assignor to Beckman Instruments, Inc.
Filed Feb. 14, 1969, Ser. No. 799,335
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 **13 Claims**



A polarographic sensor comprising a pair of electrodes joined by an electrolyte with inner and outer membranes separating the electrode and electrolyte from the sample medium. The outer membrane is permeable to the gas being determined and impermeable to electrolyte while the inner membrane has an opening therein which overlies the sensing electrode of the sensor. This inner membrane is substantially less permeable to the gas being analyzed than the outer membrane and is hydrophilic so as to retain a film of electrolyte between the outer membrane and the electrodes. Preferably the outer membrane is formed of polytetrafluoroethylene and the inner membrane of polyethylene terephthalate (Mylar).

3,575,837
MERCURY-PROCESS ELECTROLYTIC CELL
Hiroshi Shibata, Teruo Imai, Shigeji Kumaki, and Yoshimitsu Sukegawa, Iwaki-shi, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Apr. 8, 1968, Ser. No. 719,367
Claims priority, application Japan, Apr. 19, 1967, 42/24,560; Dec. 13, 1967 42/79,857
Int. Cl. C01d *1/08*
U.S. Cl. 204—220 **3 Claims**

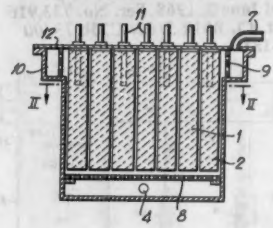


Most of the return brine in a mercury-cathode cell is caused to overflow, together with liberated chlorine, from the surface of the electrolyte out of the cell, while a part of the brine is discharged, together with the mercury, out of the cell through the mercury outlet therby to facilitate removal of contaminants and simplify apparatus organization.

3,575,838
ELECTROPHORETIC DEPOSITION OF CERAMIC COATINGS
Ernest W. Hughes, Lakewood, Ohio, assignor to Ferro Corporation, Cleveland, Ohio
No Drawing. Filed Dec. 12, 1968, Ser. No. 783,418
Int. Cl. B01k *5/00*; C23b *13/00*
U.S. Cl. 204—181 **20 Claims**

In the method of electrophoretically depositing a ceramic coating from a supply of slip thereof, the improvement step of incorporating in the tank batch, a combination of an alkali aluminate, and an alkali salt selected from the group consisting of alkali silicates, alkali zirconates and alkali titanates.

3,575,839
ELECTROLYZER WITH SOLID ELECTRODES
Mikhail Alexeevich Melnikov-Eikhenvald, Ul. Vavilova 10, korp. 20, kv. 18; Georgy Mikirtychevich Kamarian, Vorontsovskaya ul. 30b, kv. 18; Alexandr Kuzmich Nesterkin, Sovetskaya ul. 5, kv. 22; Vladimir Nikolaevich Suchkov, Ul. Marii Ulyanivoi 16, korp. 1, kv. 53; Vadim Ippolitovich Djumulen, Ul. Petra Romanova 5, kv. 8; Andrei Petrovich Tomilov, 5 Parkovaya ul. 56, korp. 6, kv. 59; and Semen Lvovich Varshavsky, 7 ul. Pavla Andreeva 28, kv. 282, all of Moscow, U.S.S.R.
Filed Feb. 15, 1968, Ser. No. 705,677
Int. Cl. B01k *3/00, 3/04*
U.S. Cl. 204—272 **4 Claims**

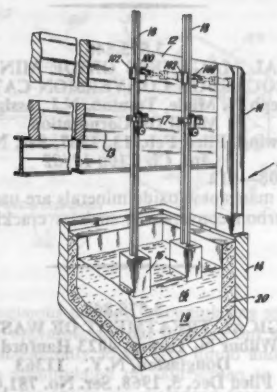


An electrolyzer is disclosed for the forced flow of an electrolyte therethrough and the electrolyzer comprises a unitary block constituting one electrode and having openings therein, the electrodes of opposite polarity being inserted with clearance in the openings to form interelectrode gaps between the electrodes. An electrolyte is circulated from an inlet of the block to an outlet thereof and passes through the electrode gaps. Grids are provided between the electrodes and the inlet and outlet respectively to distribute the electrolyte in the interelectrode gaps. Partitions permeable to electrolyte are positioned in the interelectrode gaps and have lateral projections to agitate electrolyte during its flow through the interelectrode gaps. The block has passages for the flow of a heat exchange fluid therethrough and these passages are isolated from the openings.

3,575,840
ANODE CLAMPING SYSTEM AND ANODE CLAMPS
Joel M. Morris, East Norwalk, Conn., and Jacob Brayman, Staten Island, N.Y., assignors to Metallurgical Consultants, Inc., New York, N.Y.
Filed Aug. 19, 1968, Ser. No. 753,361
Int. Cl. C23b *5/70*
U.S. Cl. 204—297 **32 Claims**

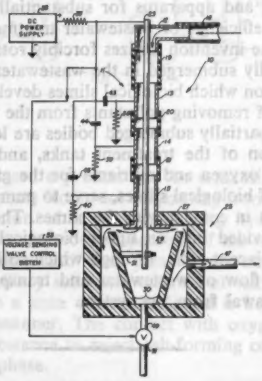
An anode rod clamping system in which quickly actuatable clamps and a fail-safe mechanism provide better clamping grasp of anode rods and quicker, firmer adjustability or replacement of ganged or individual anodes,

primarily for use in aluminum reduction. The major clamp is adapted for an adjustable bus bar with a secondary clamp on a stationary bar, to hold anode rods



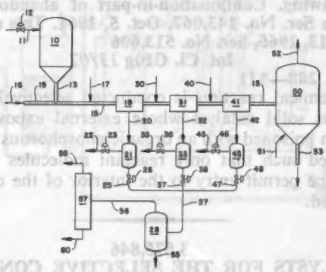
while the first clamp is released or adjusted. The system also provides better electrical contact of the anodes from the bus bar through the anode rods to the actual anode.

3,575,841
SYSTEM FOR REMOVING PARTICLES FROM A FLUID BY MEANS OF AN ELECTRIC FIELD
Clarence A. Harris, Los Altos, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Sept. 25, 1968, Ser. No. 762,460
Int. Cl. B01d *13/02*
U.S. Cl. 204—299 **7 Claims**



A system including a conduit comprised of several sections of electrically conductive pipe alternately connected with pipe of electrical insulation material, a common electrically conductive rod extending along the central axis of the conduit, and a DC power supply for setting up a high voltage non-linear field between the common rod as one electrode and each conductive section as another electrode, whereby both ionized and neutral particles in a fluid flowing through the conduit are attracted to the electrodes and deposited thereon to the extent that short circuit conduction is established through the deposits, causing the deposits to be forced from the electrodes and carried by the fluid to a settling tank for accumulation and removal from the system.

3,575,842
RECOVERING TAR FROM TAR SAND
Warren C. Simpson, Berkeley, Calif., assignor to Shell Oil Company, New York, N.Y.
Filed July 23, 1968, Ser. No. 746,791
Int. Cl. C10g *1/04*
U.S. Cl. 208—11 **6 Claims**



Removing tar from tar sand by a continuous process which includes pneumatically passing a slurry of tar sand and solvent for the tar through a pipe as a series of slugs separated by slugs of a gas, withdrawing liquid from each slug of slurry as it passes through a series of filtration zones and introducing liquid into each slug of slurry as it passes through a series of washing zones, and recovering tar from the recovered liquid. Also disclosed is the tubular continuous extraction device which includes a tubular element having a series of alternate filtering and washing zones with means to regulate the pressure in the filtering zones to be successively diminishing in the direction of flow.

3,575,843
PRODUCTION OF FUEL OILS
Robert William Aitken, Edinburgh, Scotland, and Bernard Whiting Burbidge, Leatherhead, and Brian Edward Harold Pettyfer, Walton-on-Thames, England, assignors to The British Petroleum Company Limited, London, England
No Drawing. Filed Dec. 19, 1968, Ser. No. 785,381
Claims priority, application Great Britain, Jan. 11, 1968, 1,655/68
Int. Cl. C10g *13/02, 13/10*
U.S. Cl. 208—28 **7 Claims**

Fuel oils or fuel oil components are produced from waxy atmospheric residues by vacuum distilling the residue to give a wax distillate fraction and a vacuum residue, selectively dewaxing the wax distillate fraction and reblending at least a portion of the dewaxed wax distillate fraction with at least a portion of the vacuum residue. The process is particularly suitable for atmospheric residues with 15–35% wt. wax. The preferred selective dewaxing process is catalytic, involving passing the wax distillate with hydrogen over a catalyst of a Group VI*a* and/or Group VIII hydrogenating component incorporated with mordenite of reduced alkali metal content. The mordenite is preferably decationised and has a SiO_2:Al_2O_3 ratio of at least 14:1. The dewaxing conditions may be 450–950° F., 250–3000 p.s.i.g., 0.2–20 v./v./hr. and 1000–3000 s.c.f. of H_2/B.

3,575,844
HYDROCRACKING PROCESS
Hans U. Schutt, Lafayette, Calif., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Mar. 10, 1969, Ser. No. 805,870
Int. Cl. C10g *17/02*
U.S. Cl. 208—90 6 Claims

Catalyst poisons produced by hydrotreating of organic nitrogen-containing hydrocarbon oils, are removed by chemical treatment with acids or acid compounds resulting in substantial improvement in subsequent hydrocracking.

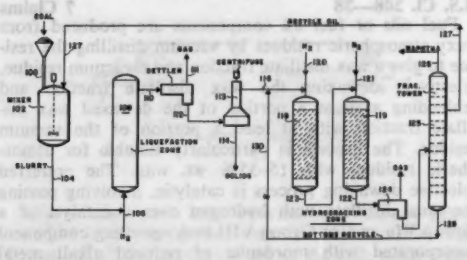
3,575,845
SELECTIVE CATALYTIC CONVERSION
Joseph N. Miale, Trenton, N.J., assignor to Mobil Oil Corporation
No Drawing. Continuation-in-part of abandoned application Ser. No. 143,067, Oct. 5, 1961. This application Dec. 13, 1965, Ser. No. 513,606
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 19 Claims

A chemical reaction is conducted selectively whereby a porous solid catalyst whose external exposed surface has been poisoned with an organic phosphorous compound is utilized such that only reactant molecules whose size and shape permit entry to the interior of the catalyst are converted.

3,575,846
CATALYSTS FOR THE SELECTIVE CONVERSION OF STRAIGHT-CHAIN HYDROCARBONS
Glen Porter Hamner, Baton Rouge, and Ralph Burgess Mason, Denham Springs, La., assignors to Esso Research and Engineering Company
No Drawing. Filed Sept. 14, 1967, Ser. No. 667,660
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 27 Claims

Improved catalysts for the selective conversion of straight-chain hydrocarbons contained in a hydrocarbon feed comprise a crystalline alumino-silicate zeolite of the erionite variety having a low potassium content. Preferably, the low-potassium erionite is combined with a metallic hydrogenation component and used in the selective conversion of low octane-producing normal paraffins to upgrade the hydrocarbon feedstock. The process is preferably conducted in the presence of added hydrogen at elevated temperatures and pressures.

3,575,847
USE OF SPHERICAL CATALYST IN COAL EXTRACT HYDROGENATION
Frank B. Sprow, Baytown, Tex., and Grady W. Harris, Cambridge, Mass., assignors to Esso Research and Engineering Company
Filed Dec. 5, 1968, Ser. No. 781,475
Int. Cl. C10g *13/02*
U.S. Cl. 208—112 7 Claims

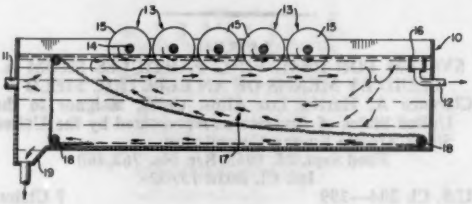


Coal extracts containing suspended solids are hydrotreated in a fixed-bed downflow reactor. Bed plugging is minimized by using substantially spherical catalyst granules having a minimum diameter at least ten times as great as the maximum dimensions of the suspended solids and maintaining a flow rate above the minimum at which occlusion of the bed results, preferably at least 1000 pounds per hour per square foot.

3,575,848
NATURAL MAGANESE OXIDE MINERALS AS HYDROCARBON CONVERSION CATALYSTS
Joseph N. Miale, Trenton, N.J., assignor to Mobil Oil Corporation
No Drawing. Filed Feb. 13, 1967, Ser. No. 615,375
Int. Cl. C10g *13/02*
U.S. Cl. 208—112 5 Claims

Natural manganese oxide minerals are used as catalysts in hydrocarbon conversions, such as cracking.

3,575,849
BIOLOGICAL TREATMENT OF WASTEWATER
Wilbur N. Torpey, 4023 Hanford St., Douglaston, N.Y. 11363
Filed Dec. 5, 1968, Ser. No. 781,452
Int. Cl. C02c *1/10*
U.S. Cl. 210—14 14 Claims

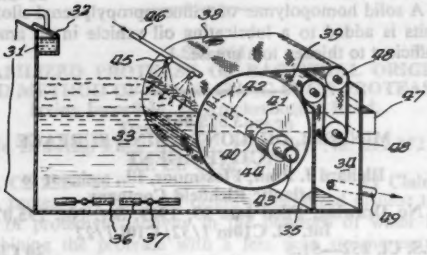


Method and apparatus for substantially upgrading the operating efficiency of wastewater treatment plants is disclosed. The invention utilizes forcibly rotating bodies that are partially submerged in the wastewater to provide surface area on which biological slimes develop and serve the purpose of removing pollutants from the wastewater. The rotating, partially submerged bodies are located in the upper portion of the treatment tanks, and, in addition to providing oxygen and nutrients for the growth and maintenance of biological slimes, serve to pump the wastewater to bring it in contact with the slimes. The treatment tank is thus divided into an upper biological treatment zone and a subjacent zone, through which solids are separated from the flow of wastewater and transported to a point of withdrawal from the system.

3,575,850
METHOD AND APPARATUS FOR TREATING WASTE MATERIALS
Roger Davidson, Arlington Heights, Ill., and Fumio F. Sako, San Jose, Warren G. Palmer, Saratoga, and Robert A. Fisher, Los Gatos, Calif., assignors to FMC Corporation
Filed July 7, 1969, Ser. No. 839,379
Int. Cl. C02c *1/12*
U.S. Cl. 210—15 11 Claims

The method of treating waste materials such as sewage involves introducing raw sewage into a body of aqueous medium, aerating said body of aqueous medium, withdrawing a sufficient volume of substantially solids free

liquid through a perforate drum supported filter which is partially submerged in said body of aqueous medium to compensate for the volume of influent waste material and thereby maintain a relatively constant volume for



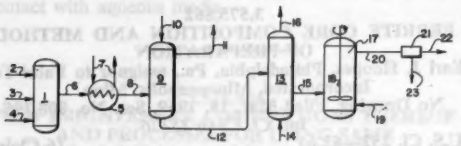
said body of aqueous medium, accumulating solids on the movable filter operating so that it filters out solids while passing the substantially solids free liquid and transporting the solids accumulated on said screen to a point of disposal where the solids are dislodged from the screen.

3,575,851

PROCESS FOR SEPARATING ASH-FORMING COMPONENTS FROM SOOT

Pieter Visser, Amsterdam, and Godfried J. van den Berg, The Hague, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed Dec. 12, 1969, Ser. No. 884,398
Claims priority, application Netherlands, Dec. 24, 1968, 6818689
Int. Cl. B01d *11/02*
U.S. Cl. 210—22 **8 Claims**



There is disclosed a process for the separation of ash-forming components from soot originating from a process for the gasification of a feed containing hydrocarbons or free carbon. An aqueous suspension of the soot is contacted with oxygen and then passed into contact with at least one auxiliary substance capable of taking up the soot particles in a zone where the liquid is kept moving in a turbulent manner. The contact with oxygen causes the auxiliary substance to reject ash-forming components to the aqueous phase.

3,575,852

METHOD FOR TREATING WASTE WATER CONTAINING DISSOLVED PHOSPHATES

John Hughes, Glenview, Ill., assignor to American Colloid Company, Skokie, Ill.

No Drawing. Filed June 6, 1969, Ser. No. 831,243
Int. Cl. C02b *1/16*
U.S. Cl. 210—28 **10 Claims**

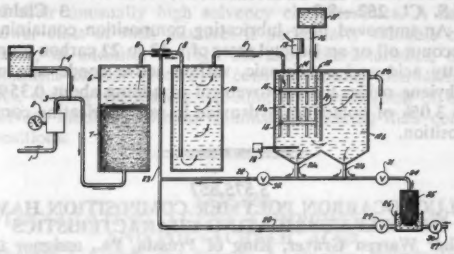
An inexpensive process for removing dissolved phosphates from waste water by precipitating same which includes adding to said waste water a mixture of lime and cation exchange material having a cation exchange capacity of at least about 20 milliequivalents per 100 grams of cation exchange material, thereby precipitating the soluble phosphates as insoluble phosphate salts.

3,575,853

WASTE WATER TREATMENT

Philip J. Gaughan, Charles A. Noll, and James K. Brown, Philadelphia, Pa., assignors to Laboratories Betz, Inc., Trevose, Pa.

Filed Dec. 24, 1968, Ser. No. 786,572
Int. Cl. C02c *5/02*
U.S. Cl. 210—46 **13 Claims**



The present disclosure relates to a process and an apparatus for affecting the process for the removal of various contaminants from waste waters and in particular, from industrial waste waters.

Water systems are conventionally treated with chromate, phosphate and zinc compounds either alone or in combination with each other and with biocides and the present invention provides for the removal of these materials from the water and any oil dispersed therein prior to its disposal. The water is first acidified, passed through a unit containing a bed of metal particles, passed into a mixing tank and then into a flocculating tank where the water is brought to an alkaline pH. Various insoluble precipitates are formed which are separated from the solution by deposition in a settling tank and by filtration.

3,575,854

RAPID SETTLING OF GELATINOUS PRECIPITATES

Raymond Richards, Detroit, Mich., assignor to M & T Chemicals Inc., New York, N.Y.

No Drawing. Filed Apr. 14, 1969, Ser. No. 816,055
Int. Cl. C02c *5/02*
U.S. Cl. 210—50 **8 Claims**

A process is provided for the rapid settling of gelatinous, flocculent precipitates of hydrous heavy metal oxides from waste effluent streams by precipitating the metals present in the streams as hydoxides in the presence of a suspended, finely divided heavy solid settling agent which is insoluble in aqueous medium and which has a minimum specific gravity of 3.5, the weight ratio of the settling agent to metal content of the precipitate being a minimum of .7 to 1.0.

3,575,855

DRILLING FLUID SYSTEM

Jack C. Estes, Tulsa, Okla., assignor to Pan American Petroleum Corporation, Tulsa, Okla.

No Drawing. Filed May 1, 1968, Ser. No. 725,947
Int. Cl. C10m *3/34, 3/30*
U.S. Cl. 252—8.5 **10 Claims**

Drilling muds containing anti-differential sticking agents which employ surface active agents as their principal active ingredient are often subject to excessive foaming. The

invention covered in this patent renders drilling muds highly resistant to foam formation by the addition of an alkylolamide to the anti-differential sticking agent. In addition to the surface active agent, the anti-differential sticking composition contains a water soluble phosphate, a glycol and a C_2 or C_3 alcohol, all dissolved in water.

3,575,856
FIBER LUBRICATING COMPOSITION AND METHOD
Anthony Anton, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed July 6, 1967, Ser. No. 651,376
Int. Cl. D06m *13/26, 13/10*
U.S. Cl. 252—8.9 **3 Claims**

An improved fiber lubricating composition containing coconut oil or an isocetyl ester of a 12 to 22 carbon atom fatty acid and a nonionic, surface-active condensate of ethylene oxide, the improvement of adding about 0.35% to 3.0% of potassium hydroxide to said lubricating composition.

3,575,857
FLUOROCARBON POLYMER COMPOSITION HAVING SELF-LUBRICATING CHARACTERISTICS
Clair Warren Graver, King of Prussia, Pa., assignor to Pennsalt Chemicals Corporation, Philadelphia, Pa.
No Drawing. Filed Sept. 18, 1968, Ser. No. 760,674
Int. Cl. C10m *5/00*
U.S. Cl. 252—12 **5 Claims**

A moldable self-lubricating fluorocarbon polymer composition is comprised of from about 40 to about 70 wt. percent of vinylidene fluoride polymer, from about 2 to about 40 wt. percent of particulated glass filler and from about 15 to about 35 wt. percent of telomers of the structure $R-(CF_2CF_2)_nX$ where R is perfluoroalkyl or monochloroperfluoroalkyl of one to four carbon atoms, X is chlorine, fluorine or iodine, and n is an integer from 6 to 16. The composition is thermally molded to form sleeve bearings, ball joint sockets, and other bearing shapes.

3,575,858
LUBRICATING COMPOSITION CONSISTING OF PERARYLATED SILANES AND SOLID LUBRICANT POWDERS
Attwell M. Adair and Leonard Spialter, Dayton, Ohio, assignors to the United States of America as represented by the Secretary of the Air Force
No Drawing. Filed May 20, 1969, Ser. No. 826,260
Int. Cl. C10m *3/44, 5/26*
U.S. Cl. 252—26 **8 Claims**

High temperature lubricants comprising homogeneous mixtures of 10 to 90 percent by weight of perarylated silanes with 90 to 10 percent by weight of solid MoS_2, graphite, BN, aluminum powder, or low melting glass. The compositions disclosed herein have utility in meeting the elevated temperature lubrication requirements of the metalworking industry.

3,575,859
GELLING HYDROCARBON FLUIDS WITH COMBINATIONS OF ALUMINUM ALKYL ORTHOPHOSPHATES AND AMINES
Roger F. Monroe, Midland, Mich., assignor to The Dow Chemical Company
No Drawing. Filed Jan. 30, 1968, Ser. No. 701,568
Int. Cl. C10m *7/44, 7/30, 5/24*
U.S. Cl. 252—32.5 **8 Claims**

Hydrocarbon liquids are gelled with small amounts of certain metal alkyl oleyl orthophosphates and amines in admixture.

3,575,860
GREASE COMPOSITION
Chi-Long Lee, George J. Quaal, and Ollie W. Marko, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Jan. 6, 1969, Ser. No. 789,662
Int. Cl. C10m *7/50*
U.S. Cl. 252—49.6 **11 Claims**

A solid homopolymer of trifluoropropylphenyl siloxane units is added to a lubricating oil vehicle in an amount sufficient to thicken to a grease.

3,575,861
MINERAL OIL CONTAINING SURFACE ACTIVE AGENT
Richard J. Pratt, Flossmoor, Ill., assignor to Atlantic Richfield Company
No Drawing. Filed Jan. 29, 1969, Ser. No. 795,070
Int. Cl. C10m *1/32;* **C10l** *1/22*
U.S. Cl. 252—51.5 **20 Claims**

The present invention provides oil-soluble, polymeric surface-active agents which are polyimide-amine salts of styrene-maleic anhydride copolymers having pendant tertiary amine groups containing a salt-forming tertiary nitrogen atom neutralized to the extent of at least about 75 percent with mono-carboxylic acids for instance having an aliphatic chain of at least about 8 carbon atoms. The salts of this invention exhibit the property of lowering the surface tension at oil-water interfaces. The polyimide-amine salts can also contain mixed imides resulting from the reaction of dialkylaminoalkylamines and monoalkyl amines or mixed imide-amides resulting from the reaction of dialkylaminoalkylamines and dialkylamines. This invention also provides oil compositions containing mineral oil and the oil-soluble, polymeric surface-active polyimide-amine salts, with or without water. These compositions are useful, for instance, as hydraulic fluids, jet fuels, electrolyte-containing oils, anti-wear lubricating oils, diesel fuels, and gasolines.

3,575,862
FERRITE CORE COMPOSITION AND METHOD OF PREPARATION
Earl J. Hoopes, Philadelphia, Pa., assignor to Fabri-Tek Incorporated, Minnneapolis, Minn.
No Drawing. Filed Mar. 18, 1969, Ser. No. 808,295
Int. Cl. C04b *35/26*
U.S. Cl. 252—62.61 **16 Claims**

Ferrite cores, useful over a wide temperature range, consisting of about 0.14 to about 1.65 mole percent tungstic trioxide, about 1 to about 8 mole percent manganese oxide, about 11.35 to about 17.86 mole percent lithium oxide and about 75 to about 84 mole percent ferric oxide. These ferrite cores are magnetic material having a high squareness ratio therefore having a a bi-stable magnetic property useful for storing information. A method of preparation is described wherein the core is sintered for a period which can be as short as about 10 to 25 minutes.

3,575,863
PHENOXYPHENOXYBIPHENYL COMPOUNDS AND COMPOSITIONS
William C. Hammann, Creve Coeur, and Robert M. Schisla, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Application Apr. 28, 1967, Ser. No. 634,446, now Patent No. 3,471,574, which is a continuation-in-part of application Ser. No. 310,457, Sept. 20, 1963. Divided and this application Apr. 21, 1969, Ser. No. 832,531
Int. Cl. C09k *3/00, 3/02*
U.S. Cl. 252—73 **2 Claims**

Compounds of classes represented by 3-(m-phenoxyphenoxy)biphenyl and 3-(p-phenoxyphenoxy)biphenyl

which exhibit liquid properties over a wide range and compositions containing said liquid compounds together with other fluids representative of which are polyphenyl ethers and phenoxybiphenyl compounds. The compounds and compositions have many uses among which are the use as a hydraulic fluid and heat transfer fluid.

3,575,864
STABILIZED PROTEASE OF BACTERIAL ORIGIN AND METHOD OF STABILIZING SUCH PROTEASE
Irving Innerfield, 20 Knickerbocker Road, Tenafly, N.J. 07670
No Drawing. Filed Apr. 17, 1969, Ser. No. 817,172
Int. Cl. C11d *7/42*
U.S. Cl. 252—89 11 Claims

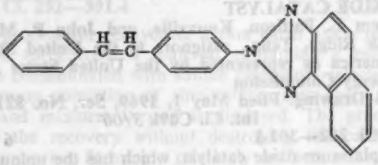
A protease of bacterial origin is stabilized against the loss of proteolytic activity in the presence of water by combining the protease with a less than stoichiometric quantity of an enzyme-ion binding agent to prolong the shelf life of the enzymic composition, and accompanying said combination with at least two members of the group consisting of salt, protein, organic solvent and detergent in a non-precipitating quantity.

3,575,865
BLEACHING COMPOSITIONS
Richard Lerda Burke, Madison, Leo Thomas Murray, East Brunswick, and William Chirash, New Providence, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Continuation of application Ser. No. 550,905, May 18, 1966. This application June 12, 1969, Ser. No. 836,213
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 10 Claims

Abrasive scouring cleanser compositions comprising an inorganic siliceous abrasive, a detergent and a compound capable of liberating hypobromite bromine upon contact with aqueous media.

3,575,866
NEW BRIGHTENERS, COMPOSITIONS THEREOF AND PROCESSES FOR USING SAME
Albert F. Strobel, Delmar, and Sigmund C. Catino, Castleton, N.Y., assignors to GAF Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 539,283, Apr. 1, 1966. This application Nov. 19, 1969, Ser. No. 878,265
Int. Cl. C11d *1/18, 1/38, 1/50, 3/26*
U.S. Cl. 252—152 14 Claims

A brightener composition particularly adapted for the brightening of polyesters comprising (a) a compound of the formula:



and (b) a non-ionic surfactant. When such a composition is employed for brightening of a polyester-cotton blend, such composition may additionally contain a stilbene-cyanuric brightener. The active brightener is precipitated by drowning the above composition, either alone or together with a suitable detergent in the wash water.

3,575,867
NOVEL SOLVENT MIXTURES
Raymond A. Nesbitt, Morristown, and Francis J. Figiel, Boonton, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Feb. 6, 1969, Ser. No. 797,245
Int. Cl. C09d *9/00;* C11d *7/50;* C23g *5/02*
U.S. Cl. 252—171 13 Claims

Certain mixtures of tetrachlorodifluoroethane and acetonitrile are useful as solvents to remove rosin fluxes from printed circuit boards. These mixtures are useful because of their unusually high solvency characteristics. A narrower class of such mixtures is particularly valuable because, in addition to high solvency characteristics, the mixtures exhibit azeotropic constant boiling characteristics, thereby facilitating handling and purification of the solvent mixtures without significantly altering their compositions.

3,575,868
FLOCCULATING AGENT COMPRISING STARCH AND POLYACRYLIC ACID
Thomas J. Galvin and Francis A. Hughes, Wilmington, Del., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.
No Drawing. Original application Mar. 4, 1965, Ser. No. 437,309, now Patent No. 3,397,953, dated Aug. 20, 1968. Divided and this application June 6, 1968, Ser. No. 734,871
Int. Cl. B01d *21/01;* C01f *7/36;* C02b *1/20*
U.S. Cl. 252—181 4 Claims

Compositions comprising starch and a polyacrylic acid are disclosed to be effective flocculating agents, especially for the clarification of sodium aluminate solutions obtained by the digestion of aluminiferous ores with caustic alkali solutions.

3,575,869
SUPERSENSITIZING COMBINATIONS OF MEROCYANINE DYES
Norman W. Kalenda, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 4, 1967, Ser. No. 711,464
Int. Cl. C09k *3/00*
U.S. Cl. 252—182 18 Claims

Combinations of at least one simple merocyanine, merocarbocyanine or merodicarbocyanine dye with at least one sulfonic acid derivative of a bis(triazinylamino) stilbene, a dibenzothiophene dioxide, a biphenyl, a terphenyl, a quaterphenyl, a phenanthrene, a pyrene, or a chrysene are used advantageously to supersensitize photographic silver halide emulsions.

3,575,870
CURING COMPOSITION OF POLYETHER AMINES AND BIS(4 - HYDROXYPHENYL)DIMETHYLMETHANE
Isao Shimoyama, Dallas, Tex. (1018 Brookhollow Drive, Irving, Tex. 75060)
No Drawing. Filed Mar. 13, 1969, Ser. No. 815,244
Int. Cl. C08h *17/62*
U.S. Cl. 252—182 6 Claims

A curing composition comprising a polyether amine selected from the group consisting of polyoxypropylenediamines, polyoxypropylenetriamines and polyoxytetramethylenediamines, and bisphenol-A, a method of preparing said curing compositions, and curable compositions prepared from said curing compositions.

3,575,871

TETRAARYL ARYLAMINIUM SALTS AND USE AS INFRARED ABSORBERS

Peter Vincent Susi, Middlesex, and Norma Ann Weston, Somerville, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of applications Ser. No. 337,036, June 22, 1964, and Ser. No. 607,390, Jan. 5, 1967, now Patent No. 3,484,467, which is a continuation-in-part of application Ser. No. 333,728, Dec. 26, 1963, which in turn is a continuation-in-part of application Ser. No. 281,056, May 16, 1963. This application Feb. 23, 1967, Ser. No. 617,859

Int. Cl. G02b 5/22; C08f 45/60; C08g 51/60

U.S. Cl. 252—300 10 Claims

A defined class of diaryl-(N,N-diarylaminoaryl)aminium salts useful as infrared absorbers is disclosed; especially the bis(p-dialkylaminophenyl)[N,N-bis(p-dialkylaminophenyl)-p-aminophenyl]aminium salts, such as bis(p-diethylaminophenyl)[N,N - bis(p - diethylaminophenyl)-p-aminophenyl]aminium hexafluoroantimonate. The aminium salts are obtained by oxidation of N,N,N′,N′-tetraarylarylenediamines with silver salts.

3,575,872

SELENOCARBAZONATES AND THEIR USE AS PHOTOCHROMIC MATERIALS

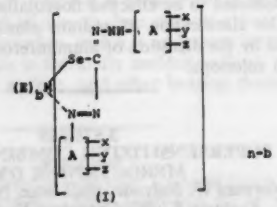
John Kazan, Jr., Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Aug. 27, 1969, Ser. No. 853,506

Int. Cl. G02b 5/22

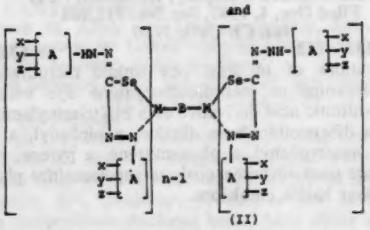
U.S. Cl. 252—300 12 Claims

Photochromic compounds are provided comprising metal complexes of 1,5-diarylselenocarbazones having the formulae:



(I)

and



(II)

wherein M is a metal selected from the group consisting of Hg, Zn, Pd and Bi; E is a halogen or R which is a radical selected from the group consisting of alkyl up to 18 carbons, alkenyl of 2–10 carbons, aralkyl and aryl; *n* is the valence of the metal M; *b* is an integer from 0 to 2 such that *n–b* is an integer greater than 0; A is an aryl radical containing from 6 to about 12 carbon atoms; *x*, *y*, and *z* are individually selected from the group consisting of hydrogen, lower alkyl, hydroxy, lower alkoxy, halo, nitro, amino, di-lower alkylamino or phenylazo; and B is alkylene of 2–10 carbon atoms or arylene of 6–12 carbon atoms.

Also, the diarylselenocarbazide and diarylselenocarbazone precursors of said metal complexes are provided.

3,575,873

THERMAL IMAGE INSPECTION PAINT

David Carver, Van Nuys, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

No Drawing. Filed Feb. 15, 1968, Ser. No. 705,618

Int. Cl. C09k 1/00; F21k 2/00

U.S. Cl. 252—301.3 8 Claims

Formulations are provided for contact thermographic coatings of a type particularly applicable for nondestructive testing of bonded structures. A heat-sensitive (thermographic) phosphor is uniformly dispersed in a vehicle of a type which will not degrade the phosphor's properties or the transmittance of the exciting ultraviolet radiation. The vehicle further provides good adherence and other desirable coating properties. Alternative formulations, including both water-base and organic-solvent base formulations, as well as a strippable (peel coat) version which may be removed from the substrate as a continuous sheet, are provided.

3,575,874

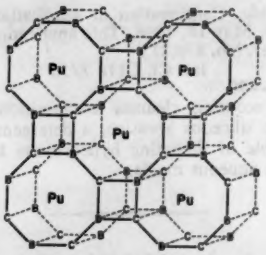
NUCLEAR FUEL CONTAINING PLUTONIUM BOROCARBIDES

Don B. Sullenger, Centerville, Ohio, assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 29, 1969, Ser. No. 820,195

Int. Cl. C01g 56/00

U.S. Cl. 252—301.1 2 Claims



A ceramic fuel for breeder reactors or the like having high radiation and thermal stability selected from the group of plutonium borocarbides and plutonium boronitrides, uranium being substitutable for or includable with the plutonium, and the boron constituent being essentially boron-11.

3,575,875

METHOD FOR PREPARING URANIUM-CONTAINING AQUASOLS EMPLOYING A PLATINUM OXIDE CATALYST

William L. Pattison, Knoxville, and John P. McBride, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed May 1, 1969, Ser. No. 821,098

Int. Cl. C09k 3/00

U.S. Cl. 252—301.1 6 Claims

A platinum oxide catalyst, which has the unique property of becoming highly flocculated in the reduced state, is employed in an improved method for preparing stable uranium-containing aquasols from a uranium (VI)-containing feed solution which is catalytically reduced by hydrogen to a uranium (IV)-containing solution in a flow-through reductor vessel. The reduced platinum oxide

catalyst is readily retained in the reductor vessel on a porous filter and the uranium (IV)-containing solution is then processed into a stable uranium-containing aquasol and calcined uranium dioxide microspheres by known sol-gel processes.

3,575,876

WET PROCESS FOR PREPARING ANTIMONY ACTIVATED ALKALINE EARTH METAL HALOPHOSPHATE PHOSPHORS

Roger D. Piper, Des Peres, Mo., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Continuation of application Ser. No. 646,493, June 16, 1967. This application Feb. 6, 1970, Ser. No. 7,408

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.4 3 Claims

Apatite-type fluorescent compositions are prepared by first precipitating an alkaline earth halophosphate intermediate that is deficient in antimony activator, then digesting the intermediate in a solution containing the antimony activator ions. A brief firing develops the fluorescent capacity to the conventional range.

3,575,877

PREPARATION OF CALCIUM-CONTAINING ALKALINE EARTH METAL HALOPHOSPHATE PHOSPHORS FREE OF TRICALCIUM PHOSPHATE

Hugh C. Bertsch, St. Louis, Mo., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Filed June 12, 1968, Ser. No. 736,279

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.4 3 Claims

Calcium-containing alkaline earth metal halophosphates prepared by precipitation at temperatures not exceeding 56° C. are essentially free of beta-tricalcium phosphate (TCP) as a secondary phase. The presence of TCP disrupts the normal relationship between manganese content and the color quality of the light emitted by a halophosphate phosphor containing manganese as an activator. Presumably, this is due to preferential absorption of manganese by the secondary TCP phase.

3,575,878

PROCESS FOR RECLAIMING PHOSPHORS

Emil J. Mehalchick, Towanda, and Henry B. Minnier, Dushore, Pa., assignors to Sylvania Electric Products Inc.

No Drawing. Filed Apr. 21, 1969, Ser. No. 818,089

Int. Cl. C09k *1/10*

U.S. Cl. 252—301.4 5 Claims

A process for recovering a rare earth oxide phosphor usable form from a material containing a rare earth oxide contaminated with sulfide phosphors selected from the group consisting of zinc sulfide, zinc cadmium sulfide and mixtures thereof is disclosed. The process enables the recovery without destroying the oxide form and comprises forming a relatively uniform mixture consisting essentially of the contaminated material and an amount of ammonium halide stoichiometrically equivalent to the amount of the sulfide phosphor present in the contaminated material and heat treating the relatively uniform mixture at a temperature of at least 1000° C. and for a time sufficient to remove said sulfides.

3,575,879

BIVALENT EUROPIUM ACTIVATED BARIUM OCTABORATE LUMINESCENT MATERIAL

George Blasse and Jaap de Vries, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 9, 1969, Ser. No. 823,347

Claims priority, application Netherlands, May 10, 1968, 6806648

Int. Cl. C09k *1/66*

U.S. Cl. 252—301.4 3 Claims

Bivalent europium activated barium octaborate phosphors, in which the greater part of the luminescent energy is radiated between 380 and 440 nm. in response to ultraviolet exciting radiation, have utility in mercury vapor discharge lamps.

3,575,880

PROCESS FOR THE PREPARATION OF A SOLVENT-FREE, AQUEOUS, NEUTRAL CYANURIC CHLORIDE SUSPENSION

Heinzbert Wojahn, Leverkusen, and Ernst August Kleinheidt and Heinrich Gold, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 4, 1967, Ser. No. 658,067

Claims priority, application Germany, Aug. 11, 1966, F 49,921

Int. Cl. B01j *13/00*

U.S. Cl. 252—311 8 Claims

Neutral, aqueous suspensions of cyanuric chloride, free from organic solvents are prepared by passing molten cyanuric chloride into water maintained at about 146 to 200° C. while maintaining the ratio of water to cyanuric chloride at not below 1:1.

3,575,881

METHOD OF GELLING IONIC LIQUIDS AND GELLED COMPOSITION

Bobby L. Atkins, Robert N. Bashaw, John B. Gardner, and Billy G. Harper, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 418,885, Dec. 16, 1964. This application Dec. 26, 1967, Ser. No. 693,070

Int. Cl. B01j *13/00;* C05c *1/00;* C11d *7/08*

U.S. Cl. 252—316 12 Claims

A method of gelling dilute or concentrated inorganic acids, having an oxidizing potential of less than that of concentrated nitric acid, and aqueous solutions of acids, bases, or salts comprising adding thereto a minor amount of a polymerized organic N-vinyl-substituted heterocyclic nitrogen compound. The polymers used are cross-linked, water-insoluble and water-swellable, and they are dried and pulverized before being admixed with the ionic liquid to be gelled. The gelled compositions are useful in preparing improved salt-containing fertilizers and in cleaning surfaces.

3,575,882

ENCAPSULATION PROCESS

Jan E. Vandegaer, Wayne, N.J., and Frank G. Meier, Tuxedo, N.Y., assignors to Pennwalt Corporation

No Drawing. Continuation-in-part of application Ser. No. 444,381, Mar. 31, 1965. This application Sept. 25, 1968, Ser. No. 762,603

Int. Cl. B01j *13/02;* B44d *1/02*

U.S. Cl. 252—316 7 Claims

In a process for encapsulation by interfacial condensation of a pair of complementary, direct-acting, organic,

polycondensate-forming intermediates in separate first and second liquids which are substantially immiscible, thereby encapsulating droplets of the first liquid within a skin of the produced polycondensate, the character of the two liquids being such that the polycondensate skin grows away from the first liquid and into the second liquid at any interface therebetween, the improvement for preventing coalescence and agglomeration of the capsules both during and after the termination of polycondensate skin growth, characterized by the presence of a solid finely divided dispersing agent in the second liquid while the polycondensate skin is growing, the agent being substantially insoluble in the first and second liquids, and being of sufficient particle size to be retained on the polycondensate skin surface.

3,575,883
SURFACTANT COMPOSITIONS
John T. Foley, Verona, N.J., assignor to Witco Chemical Corporation
No Drawing. Filed June 14, 1965, Ser. No. 463,874
Int. Cl. B01f *17/08;* **C11d** *1/28*
U.S. Cl. 252—354 **6 Claims**

Water-soluble surfactant compositions which are stable in strong alkaline solutions and which are useful as detergents and emulsifiers and which comprise mixtures of (a) condensation products of long chain aliphatic monocarboxylic acids, diethanolamine, and mononuclear aromatic polybasic acids in certain molar ratios to each other, depending upon whether the mononuclear aromatic polybasic acid is dicarboxylic, tricarboxylic, tetracarboxylic or hexacarboxylic, illustrated by a condensation product of 1 mol of a long chain aliphatic monocarboxylic acid, 6 to 7.5 mols of diethanolamine, and 2 to 2.4 mols of phthalic anhydride, with (b) sulfonated aliphatic unsaturated carboxylic acids.

3,575,884
METHOD FOR THE PRODUCTION OF ACTIVE CHARCOAL FROM SAWDUST TREATED WITH SULPHURIC ACID
René-Rodolphe Seiler, Lausanne, Switzerland, assignor to Wilhelm Squindo, Lausanne, Switzerland
No Drawing. Filed June 25, 1968, Ser. No. 739,645
Claims priority, application Switzerland, June 27, 1967, 8,908/67; Dec. 8, 1967, 17,120/67
Int. Cl. C01b *31/08*
U.S. Cl. 252—422 **11 Claims**

An improved method for producing adsorbent charcoal is disclosed, said method involving the distillation of sawdust from resinous woods in the presence of a predetermined amount of diluted sulphuric acid as a twofold-action catalyst. A modification of the method involves the additional step of reheating, upon cooling, at a temperature exceeding by 50° C. the distillation temperature. The addition of pore-filling, coke-forming components is also contemplated. The charcoal so produced is particularly advantageous for various physico-chemical processes, such as purification of waste and sewage waters and others.

3,575,885
SUPPORTED CUPROUS HALIDE ABSORBENTS AND METHODS FOR THEIR PREPARATION
Edward Allen Hunter, Lake Jackson, Tex., and Marnell Albin Segura and William Lambert Senn, Jr., Baton Rouge, La., assignors to Esso Research and Engineering Company
No Drawing. Filed Mar. 1, 1965, Ser. No. 436,375
Int. Cl. B01j *11/24*
U.S. Cl. 252—429 **17 Claims**

Supported active cuprous halide sorbents are prepared by contacting a cuprous halide solution with a porous, particulate support, such as silica and/or alumina to impregnate the cuprous halide therein, then contacting the impregnated support with a suitable ligand, such as butadiene, to form an insoluble complex within the pores of the support, and activating the sorbent by decomplexing the complex.

3,575,886
CATALYST AND OXIDATION OF OLEFINS
Louis E. Trapasso, Westfield, N.J., and John D. Wenrick, Cuyahoga Falls, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Original application June 28, 1966, Ser. No. 561,043, now Patent No. 3,497,553, dated Feb. 24, 1970. Divided and this application July 25, 1969, Ser. No. 869,417
Int. Cl. B01j *11/74*
U.S. Cl. 252—439 **2 Claims**

A catalyst for oxidizing olefins to produce unsaturated aldehydes and monocarboxylic acids which comprises oxides of nickel, chromium, molybdenum and tellurium in a molar ratio of 0.5–5 nickel, 0.5–2 chromium, 0.5–4 tellurium and molybdenum in an amount such that the ratio of nickel to molybdenum is from 0.1 to less than 1.

3,575,887
FLUORIDE-CONTAINING CRYSTALLINE ALUMINO-SILICATES
William B. Wilson, Pleasant Hill, Calif., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Mar. 19, 1968, Ser. No. 714,319
Int. Cl. B01j *11/78*
U.S. Cl. 252—442 **15 Claims**

A novel crystalline alumino-silicate containing fluorine incorporated into the crystalline structure is prepared by treatment of an alumino-silicate sequentially with a dilute non-fluoride acid solution followed by treatment with a halogen solution containing fluoride and chloride ions. The fluoride-containing alumino-silicates are highly active and stable hydroconversion catalysts especially when composited with a hydrogenative metal component.

3,575,888
SILVER CATALYST
John C. Long, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed Apr. 28, 1969, Ser. No. 819,961
Int. Cl. B01j *11/20*
U.S. Cl. 252—476 **7 Claims**

A supported silver catalyst, useful in the preparation of ethylene oxide, is produced by reducing a dried, supported, reducible silver compound, in the absence of any substantial amount of water, with a solution of a reducing agent in a suitable solvent in which the silver compound is at most only slightly soluble.

3,575,889
FILM FORMING COATING AGENTS WITH INCREASED ELECTRONIC CONDUCTIVITY
Walter Klopffer, Frankfurt am Main, Helmut Rabenhorst, Frankfurt-Niederrad (Main), and Winfried Willicks, Hofheim, Taunus, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany
No Drawing. Filed Feb. 2, 1967, Ser. No. 613,446
Claims priority, application Germany, Feb. 25, 1966, H 58,646
Int. Cl. H01b *1/06*
U.S. Cl. 252—500 **12 Claims**

Film forming coating agents with increased electronic conductivity containing (1) electron Donators comprising film forming polymers containing aromatic or heterocyclic rings and electron repelling groups, whose ionization energy (I) is less than 8.0 ev. and (2) electron

Acceptors comprising monomeric, olefinically unsaturated compounds, quinonoid compounds or benzenoid compounds having electron attracting groups, whose electron affinity (E_A) is more than 1.0 ev., in a molar ratio of Acceptor to Donator of 1:500 to 4:10 and $I-E_A$ being between 4.5 to 6.0 ev. The film forming coating agents are useful for antistatic finishing of non-conductive synthetic polymer products.

3,575,890

OXAZINE AND OXAZOLINE DERIVED C-N BACKBONE POLYMERS

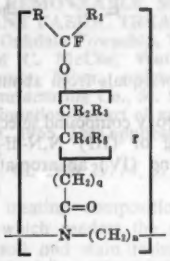
Morton Herbert Litt, University Heights, Cleveland, Ohio, Francis W. Evans, Pratteln, Switzerland, and Joseph T. Melillo, South Orange, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 26, 1969, Ser. No. 802,672

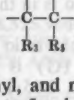
Int. Cl. C08g *33/02*

U.S. Cl. 260—2 **6 Claims**

Polymers comprising recurring units of the structure:

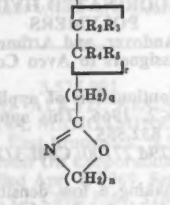


wherein R and R_1, which can be the same or different, are perhalogenated alkyl radicals in which the halogen atoms are chlorine, or fluorine, with at least one fluorine atom being attached to each carbon atom; wherein R and R_1 together contain a total of from 2 to 8 carbon atoms; wherein R_2, R_3, R_4 and R_5 are independently chlorine, fluorine, hydrogen, or perfluoromethyl with not more than one of the substituent groups R_2, R_3, R_4 or R_5 in any



unit being trifluoromethyl, and not more than two being chlorine; wherein r is 0 to 5; wherein q is 0 to 11 with q being at least 1 when $r=0$; and wherein n at each occurrence is independently 2 or 3; have a low critical surface energy and are useful in imparting oil and water repellency to fabrics impregnated or coated therewith.

These polymers are prepared from novel monomers of the structure



wherein n is 2 or 3, and wherein R, R_1, R_2, R_3, R_4, R_5, r and q are as defined above.

3,575,891

STABILIZED POLYIMIDES

John R. Le Blanc, Wilbraham, Edward Lavin, Longmeadow, Albert H. Markhart, Wilbraham, and Irving Serlin, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 2, 1968, Ser. No. 694,833

Int. Cl. C08g *51/56, 51/58, 51/60*

U.S. Cl. 260—2.5 **18 Claims**

Disclosed herein are resin systems characterized by improved oxidative thermal stability which are obtained by incorporating a beneficiating stabilizing additive into a polymer forming composition comprising (1) aromatic polycarboxylic components containing from three to four carboxylic acid groups per molecule selected from the group consisting of free polycarboxylic acids, esters of polycarboxylic acids and ammonium salts of polycarboxylic acids and (2) a polyamine component having at least two primary amino groups per molecule. The beneficiating stabilizing additives used in the practice of the present invention include boric acid, phosphoric acid, sulfuric acid and their acid derivatives and esters and ammonium salts of the foregoing acids.

3,575,892

LIQUID BUTANE PROCESS FOR PREPARING FOAMABLE BEADS

Michael Erchak, Jr., Ridgewood, Philip L. Mercier, Ramsey, and Kenneth W. Doak, Wyckoff, N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Filed Feb. 9, 1968, Ser. No. 704,233

Int. Cl. C08f *47/10;* **C08v** *1/26*

U.S. Cl. 260—2.5 **8 Claims**

The process comprises impregnating beads of a polymer such as polystyrene in a non-aqueous environment with liquefied butane at conditions sufficient to maintain the butane in its liquefied state, removing the excess butane from the impregnated beads and recovering the foamable beads.

3,575,893

COPOLYMERS CONTAINING PHENYLDIMETHYL CARBINOL GROUPS

Hans-Josef Buysch and Heinrich Krimm, Krefeld-Bochum, Hermann Schnell, Krefeld-Urdingen, and Georg Malamet, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 25, 1968, Ser. No. 739,659

Claims priority, application Germany, July 11, 1967, F 52,917; July 12, 1967, F 52,931; Apr. 26, 1968, P 17 70 272.6

Int. Cl. C08f *15/00, 47/10*

U.S. Cl. 260—2.5 **4 Claims**

Copolymers containing phenyldimethyl carbinol groups, crosslinked plastics comprising said copolymers and foams of the crosslinked copolymers. The processes for preparing the copolymers, crosslinked copolymers and foams are also disclosed.

3,575,894

PROCESS FOR MAKING WATER VAPOR PERMEABLE MICROPOROUS SHEETING

Bruno Zorn, Cologne-Flittard, Harald Oertel, Odenthal-Globusch, and Dieter Dieterich, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 647,590, June 21, 1967. This application July 22, 1968, Ser. No. 746,253

Claims priority, application Germany, July 22, 1967, F 53,031

Int. Cl. C08g *53/08, 1/20*

U.S. Cl. 260—2.5 **11 Claims**

A process for producing microporous sheeting permeable to water vapor comprising dissolving from about 90 to about 70 parts by weight of (A) a polyurethane urea

having substantially no free NCO groups and from about 10 to about 30 parts by weight of (B) a high molecular weight substantially linear cationic polyurethane having substantially no free NCO groups in (C) a water soluble strongly polar solvent for the polyurethane urea (A), the solvent having a boiling point above about 100° C., said solution containing (E) from about 0.5 to 7% by weight, based on the total solution, of water to yield a solution (D), shaping the solution (D) and extracting the solvent from the resulting product. Solution (D) may either be exposed to moist air in order to effect gelling prior to extracting the solvent with a non-solvent which is miscible with the solvent or may be treated with a solvent/non-solvent mixture, subsequently with further solvent/non-solvent mixtures of decreasing solvent content and finally with pure non-solvent. In this latter mode of operation gelling in moist air may be omitted.

3,575,895

USE OF A HYDROCARBON UREA ADDUCT IN MAKING SPONGE RUBBER

Norman C. Ross, Franklin, and Bernard K. Mueller, Bakersfield, Pa., assignors to Witco Chemical Corporation. New York, N.Y.

No Drawing. Original application Aug. 26, 1966, Ser. No. 575,250, now Patent No. 3,502,632, dated Mar. 24, 1970. Divided and this application Feb. 5, 1969, Ser. No. 823,213

Int. Cl. C08f *47/10;* **C08j** *1/18, 1/20*

U.S. Cl. 260—2.5 **2 Claims**

Production of sponge rubber by adding to a vulcanizable rubber compound a blowing agent and a small amount of an adduction product of urea with a stoichiometric excess of a solution containing between about 25 and 75 weight percent of n-paraffin hydrocarbon having about 17 to 30 carbon atoms in light neutral paraffinic oil, and effecting sponging of said rubber.

3,575,896

MICROCELLULAR FOAMS HAVING A LOW GLASS TRANSITION TEMPERATURE

Obaidur Rahman Khan, Center Harbor, N.H., assignor to Davidson Rubber Company, Inc., Dover, N.H.

No Drawing. Continuation-in-part of application Ser. No. 754,114, Aug. 16, 1968. This application June 3, 1969, Ser. No. 830,094

Int. Cl. C08g *22/08, 22/46, 53/08*

U.S. Cl. 260—2.5 **4 Claims**

A microcellular polyurethane foam having an integral skin prepared by reacting:

(1) a prepolymer system having an —NCO content of from 6 to 12 percent made by reacting:

(A) toluene diisocyanate with

(B) an organic diol selected from the group consisting of (I) a diol having a molecular weight of about 1000, (II) a diol having a molecular weight of about 2000 and (III) a mixture of a diol having a molecular weight of about 1000 and a diol having a molecular weight of about 2000; and

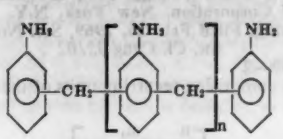
(2) a catalyst system comprising:

(C) an organic diol selected from the group consisting of (I) a diol having a molecular weight of about 2000, (II) a mixture of a diol having a molecular weight of about 1000 and a diol having a molecular weight of about 2000, wherein the 1000 molecular weight diol is present in an amount up to about 30 percent by weight of the mixture of 1000 and 2000 molecular weight diols, (III) a mixture of a diol having a molecular weight of about 2000 and 1,4-butane diol and (IV) a mixture of a diol having a molecular weight of about 1000, a diol having a molecular weight of about 2000 and 1,4-butane diol;

(D) a blowing agent;

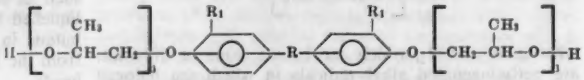
(E) an organo-metallic catalyst;

(F) an aromatic amine having the formula



wherein *n* equals from about 0.1 to about 0.3; and

(G) a hydroxy compound selected from the group consisting of (III) N,N-di-(2-hydroxypropyl) aniline and (IV) an aromatic diol having the formula



and (V) mixtures of (III) and (IV); the proportions of (A) to (B) to (C) to (F) to (G) being such that:

(a) the isocyanate index is from about 100 to about 120;

(b) the $-NH_2$ from aromatic amine to —OH ratio is in the range of from 0.5:1.0 to 1.0:1.0.

(c) the weight ratio of (G) to the sum of (F) and (G) is in the range of from 0.75:1.0 to 0.95:1.0 when (G) is N,N-di-(2-hydroxypropyl)-aniline and when an aromatic diol is employed as a substitute in total or in part for N,N-di-(2-hydroxylpropyl)-aniline, said aromatic diol is employed in an amount chemically equivalent to the amount of N,N-di-(2-hydroxypropyl)-aniline being replaced.

3,575,897

FOAMED FLUORINATED HYDROCARBON POLYMERS

William S. Port, Andover, and Arthur R. Taverna, Lexington, Mass., assignors to Avco Corporation, Cincinnati, Ohio

No Drawing. Continuation of application Ser. No. 546,620, May 2, 1966. This application June 6, 1969, Ser. No. 832,555

Int. Cl. B29d *27/00;* **C08f** *3/22, 47/10*

U.S. Cl. 260—2.5 **4 Claims**

A method of making a low density polymeric foam through the utilization of a foaming agent which dissociates reversibly under the control of temperature and pressure.

3,575,898

POLYVINYL CHLORIDE-ANTIMONY OXIDE FLAME-RETARDANT MIXTURES FOR CELLULOSIC SPINNING DOPES

Robert L. McClure, Elizabethton, Tenn., assignor to Beaunit Corporation, New York, N.Y.

No Drawing. Filed June 20, 1968, Ser. No. 738,399
Int. Cl. D01f 3/04
U.S. Cl. 260—17.4 2 Claims

The present invention relates to cellulosic compositions which are capable of being formed into flame-retardant structures, such as fibers, filaments, films and the like. These flame-retardant cellulosic compositions are prepared by adding a flame-retarding amount of a mixture comprised of a vinyl chloride polymer and an antimony oxide to cellulosic spinning solutions or dopes followed by the coagulation of these solutions or dopes to produce flame-retardant cellulosic shaped articles, such as filaments, fibers, films and the like.

3,575,899

LAUNDERABLY REMOVEABLE, SOIL AND STAIN RESISTANT FABRIC TREATMENT

Donald M. Pryor, Oakdale Township, Washington County, and Edward C. McCue, Woodbury Township, Washington County, Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 489,070, Sept. 21, 1965. This application July 28, 1969, Ser. No. 845,563
Int. Cl. C08f 29/16, 3/64
U.S. Cl. 260—17.4 13 Claims

A non-durable treating composition for frequently laundered fabrics which renders the surface of fabrics treated therewith soil and stain resistant. The treating composition is removed from the fabric surface by laundering. The treating composition comprises an aqueous suspension of a water insoluble fluorocarbon compound containing a hydrophobic and oleophobic perfluoroalkyl group of at least 3 carbon atoms adsorbed on a water soluble organic film-forming fabric sizing agent, said suspension having a maximum solids content of about 25 weight percent. A method of treating fabrics and treated fabrics are also disclosed.

3,575,900

ELECTROSTATICALLY SPRAYABLE ALUMINUM-PIGMENTED PAINTS AND PROCESS FOR PRODUCING SAME

Charles A. Ponyik, Jr., Maple Heights, Ohio, assignor to Mobil Oil Corporation

No Drawing. Filed Mar. 18, 1969, Ser. No. 808,306
Int. Cl. C09d 3/64, 3/74, 5/24
U.S. Cl. 260—21 7 Claims

A resin such as a vinyl chloride copolymer is dissolved in an oxygen-containing solvent, such as methyl ethyl ketone, and an aluminum pigment paste is dispersed therein. The proportion of hydrocarbon solvent is increased until the resin precipitates colloidally on the aluminum pigment to form a concentrate in which the aluminum particles are protected. The concentrate can be incorporated in paints which are electrostatically sprayable.

3,575,901

POLYESTER AND ALKYD RESINS INCLUDING TERTIARY ALKYL MANOAMINE COMPONENT

Henry Ashjian, East Brunswick, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Apr. 4, 1969, Ser. No. 813,722
Int. Cl. C09d 3/64, 3/66
U.S. Cl. 260—22 17 Claims

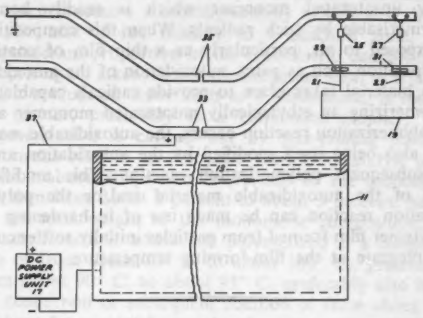
Polyester resins, and especially alkyd resins in mineral spirit solution, are modified for improved compatibility with other resins by condensing into the polyester, including alkyd resins, from 3 to about 30% by weight of alkyl monoamine in which the carbon atom carrying the amine group is a tertiary carbon atom.

3,575,902

ELECTRODEPOSITION OF ACID RESIN I

Ivan H. Tsou, Pontiac, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of application Ser. No. 363,813, Apr. 30, 1964. This application Apr. 24, 1968, Ser. No. 734,827
Int. Cl. C08g 30/00
U.S. Cl. 260—23 2 Claims



A paint bath composition for electrodeposition of paint upon an anode comprising an aqueous dispersion of particulate pigment, a water soluble base, and a polycarboxylic acid resin having olefinically unsaturated side chains and formed by first reacting a polyhydroxylated polymer with an olefinically unsaturated, acyclic, carboxylic acid of about 18 carbon atoms, reacting the resulting resin with trimellitic anhydride and subsequently reacting the resultant acid resin with a polyolefin glycol having a molecular weight in excess of about 200.

3,575,903

ANTISTATIC COMPOSITIONS OF POLYSTYRENES AND N-OXYETHYLATED ALKYLAMINES

Konrad Rombusch and Friedrich Seifert, Marl, Germany, assignors to Chemische Werke Huls A.G., Marl, Germany

No Drawing. Filed July 20, 1966, Ser. No. 566,474
Claims priority, application Germany, July 29, 1965, P 15 44 712.8
Int. Cl. C08f 33/02, 19/08, 19/18
U.S. Cl. 260—23 12 Claims

1. An antistatic composition comprising a normally solid polymer of styrene having substantially uniformly and intimately distributed therein from 0.5 to 3.0% by weight of at least one N-oxyethylated alkylamine of the formula:

wherein

R_1 represents an alkyl or alkenyl of 6–22 carbon atoms; R_2 and R_3, being the same or different, each represents $-(C_2H_4O)_nH$, n being 1 to 3, or hydrogen, with the provision that R_2 and R_3 cannot both simultaneously represent hydrogen, and further distributed uniformly and intimately in said polymer of styrene, a fatty acid of 6–22 carbon atoms in a concentration of not more than 100 molar percent based on said N-oxyethylated alkylamine.

3,575,904

LATICES COMPRISING POLYMER MONOMER AND AUTOXIDIZABLE MATERIAL

Michael Raymond Clarke, Frankstone, Victoria, Australia, assignor to Balm Paints Limited, Melbourne, Victoria, Australia

No Drawing. Continuation-in-part of application Ser. No. 516,690, Dec. 27, 1965. This application Dec. 28, 1966, Ser. No. 605,169

Claims priority, application Australia, Jan. 5, 1965, 53,587/65

Int. Cl. C09d 5/02

U.S. Cl. 260—23 16 Claims

A composition which comprises a dispersion of film-forming polymer in an aqueous liquid, an autoxidizable material which in the presence of oxygen provides radicals to initiate addition polymerization, and an ethylenically unsaturated monomer which is readily homopolymerisable by such radicals. When this composition is exposed to air, particularly as a thin film of coating composition such as paint, autoxidation of the autoxidizable material takes place to provide radicals capable of polymerizing an ethylenically unsaturated monomer and a polymerization reaction occurs, the autoxidizable material also being itself modified by the autoxidation and/or subsequent polymerization reaction. This modification of the autoxidizable material and/or the polymerization reaction can be made use of in hardening up a polymer film formed from particles initially soft enough to integrate at the film-forming temperature.

3,575,905

HEAT STABILIZERS FOR POLYVINYL CHLORIDE AND SIMILAR POLYMERS

Philip H. Rhodes, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Filed Feb. 1, 1968, Ser. No. 702,408

Int. Cl. C08f 45/58, 45/02

U.S. Cl. 260—23 7 Claims

Polymers and copolymers of vinyl chloride can be thermally stabilized by adding an aryl alkyl phosphite together with a zinc salt in an amount corresponding to between 0.0005 and 0.005 part of divalent zinc. In these amounts, zinc effectively retards thermal discoloration without causing sudden degradation. The stabilized polymer compositions may also contain other conventional plastics additives.

3,575,906

VINYL CHLORIDE POLYMER MIXTURES FOR THE PREPARATION OF TRANSPARENT RIGID SHEETS

Gerhard Kuhne, Burghausen (Salzach), and Erich Zentner, Burgkirchen (Alz), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 7, 1968, Ser. No. 735,164

Claims priority, application Germany, June 13, 1967, F 52,663

Int. Cl. C08f 29/24, 37/18, 45/58

U.S. Cl. 260—23.7 4 Claims

The present invention relates to rigid sheets on the basis of polyvinyl chloride, plastomers and elastomers, said sheets being obtained by a calendering process. The material comprises (a) an emulsion homo- or copolymer of vinyl chloride, (b) a suspension polymer of vinyl chloride, (c) a graft copolymer of vinyl chloride based on a cross-linked copolymer of a conjugated diene and acrylo- or methacrylonitrile, and eventually (d) a cross-linked elastomeric copolymer similar to the basic copolymer of (c). The sheets according to the invention have an improved impact resistance and deep-drawing properties in combination with a good transparency and good other physical constants.

3,575,907

POLYPIVALOLACTONE FIBERS AND A METHOD FOR THEIR MANUFACTURE

Tohru Kitazawa, Osaka, Hiroshi Maeda, Kobe, and Hideo Yoshidome and Hidehiko Sakata, Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed July 27, 1967, Ser. No. 656,350

Claims priority, application Japan, July 29, 1966, 41/49,782, 41/49,783, 41/49,784

Int. Cl. C08f 29/12, 37/18

U.S. Cl. 260—28 8 Claims

A drawn, tenacious polypivalolactone fiber having a density of 1.17 at the most and a sufficient heat-setting ability which comprises a polymer consisting essentially of polypivalolactone which can be obtained by uniformly incorporating a polymer consisting essentially of polypivalolactone with a small amount of at least one organic compound selected from the group consisting of polyethylene, partially oxidized polyethylene, copolymers of ethylene and α,β-ethylenic unsaturated carboxylic acid, polyethylene oxide, paraffinic hydrocarbons, esters of phosphoric acid and esters of phosphorous acid, extruding the mixture through an orifice of a spinneret, applying high draft to the extruded mixture while it is still in a molten or plasticized state to thereby form undrawn fibers, and thereafter, drawing said undrawn fiber. Said uniform admixture of said compound leads to broadened ranges of the conditions suitable for spinning, improved feasibility of operation, retardation of crystallizing velocity of the polymer after being spun and solidified, and markedly improved orientation.

3,575,908

USE OF ASPHALTENES TO INCREASE THE IMPACT RESISTANCE OF POLYETHYLENE TEREPHTHALATE

Robert J. Bathgate, Media, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

No Drawing. Filed Sept. 12, 1968, Ser. No. 759,513

Int. Cl. C08h 13/08

U.S. Cl. 260—28 4 Claims

A new composition having superior physical properties which consists of polyethylene terephthalate and up to 12% by weight asphaltene.

3,575,909

ELECTRODEPOSITION BATH COMPOSITION AND REPLENISHMENT COMPOSITION THEREFOR

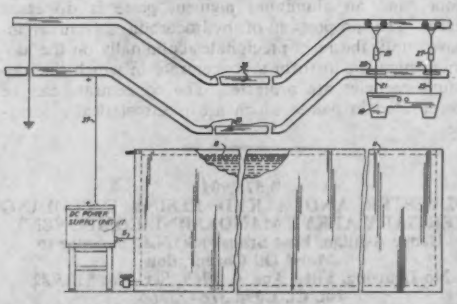
Allan E. Gilchrist, Westlake, Ohio, assignor to Ford Motor Company, Dearborn, Mich.

Original application Jan. 4, 1966, Ser. No. 518,667, now Patent No. 3,362,899, dated Jan. 9, 1968. Divided and this application Oct. 9, 1967, Ser. No. 673,879

The portion of the term of the patent subsequent to Jan. 18, 1983, has been disclaimed

Int. Cl. C08g 51/02

U.S. Cl. 260—29.2 7 Claims



This application discloses a coating bath composition, a high solids content replenishment composition for dispersion in said bath and a method for preparing a high

solids replenishment composition for dispersion in said bath. The coating bath comprises an intimate mixture of water, binder resin and water soluble amino compound wherein the weight ratio of binder resin to pigment is at least about 2:1 and substantially above the same ratio in the paint film that will electrodeposit from such bath. In the replenishment composition, this ratio is at least about 1.5:1 and substantially the same as the same ratio in the paint film that will electrodeposit from said bath.

3,575,910

SILOXANE-ACRYLATE COPOLYMERS AND EMULSIONS THEREOF

Robert N. Thomas, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation of application Ser. No. 554,984, June 3, 1966, which is a continuation-in-part of application Ser. No. 482,591, Aug. 25, 1965. This application July 1, 1968, Ser. No. 741,246

Int. Cl. C08f *45/24, 35/02, 11/04*

U.S. Cl. 260—29.6 **12 Claims**

Silicone-acrylate copolymers, aqueous emulsions of these copolymers, latex paints containing the copolymers and articles of manufacture having a coating containing the copolymers are disclosed. The copolymers, particularly as aqueous emulsions, are useful in preparing latex coatings.

3,575,911

ADHESIVES

Richard L. Peterson, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Original application Nov. 19, 1964, Ser. No. 412,329, now Patent No. 3,441,430, dated Apr. 29, 1969. Divided and this application June 19, 1968, Ser. No. 751,328

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 **2 Claims**

Water-soluble adhesive compositions are made by copolymerizing 60–95 parts of an acrylic acid and correspondingly 40 to 5 parts of a water-soluble homopolymerizable acrylate (e.g., 2-ethoxy ethyl acrylate), thereafter adding 100–200 parts of compatible liquid water-soluble ether plasticizer, up to 2 parts of strong alkali, and ½ to 3 parts of polyfunctional crosslinking agent.

3,575,912

SHORT STOPPING SYNTHETIC RUBBER POLYMERIZATION WITH HYDROQUINONE TERTIARY AMINE OXIDE COMPOUND

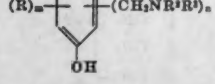
Harry Elmer Albert, Lafayette Hill, Pa., assignor to Pennwalt Corporation

No Drawing. Filed May 22, 1968, Ser. No. 731,274

Int. Cl. C08d *1/09, 1/36*

U.S. Cl. 260—29.7 **9 Claims**

A process for short-stopping polymerizations, particularly polymerization processes for making synthetic rubber latices such as butadiene-styrene copolymers, where the short-stopping agent is a hydroquinone tertiary amine oxide of the structure



where R is an alkyl radical, chlorine, bromine, nitro or a $-(CH_2NR^2R^3)$ group; m is 0 or 1; R^2 and R^3 are alkyl radicals, β-hydroxyalkyl radicals, or oxydiethylene when taken together; and n is 1 or 2.

3,575,913

STABLE LATEX FOR PAPER COATING COMPOSITIONS

Gary L. Meier, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 8, 1968, Ser. No. 719,731

Int. Cl. B32b *29/06;* **C08d** *3/06;* **C08f** *15/40*

U.S. Cl. 260—29.7 **14 Claims**

A latex having improved pigment stability for use in paper coating is prepared by a process for emulsion polymerization of ethylenically unsaturated monomers, in which process a monoethylenically unsaturated dicarboxylic acid is fed initially to a reaction zone, the preponderant proportion of the monomeric composition, comprising an alkenyl aromatic monomer such as styrene and a conjugated diene such as 1,3-butadiene, is fed to the reactor, preferably in a continuous manner, and polymerization is carried out by free-radical producing means such as an inorganic persulfate catalyst until at least about 90 percent conversion of the monomers and then from about 1 percent to about 5 percent, based on the total weight of the monomeric composition, of an acrylic acid is added and polymerized at a temperature of from about 70° C. to about 100° C., preferably from about 90° C. to about 95° C. preferably also with the concurrent or subsequent addition of from about 0.1 to about 0.6 percent by weight of an inorganic persulfate catalyst, the percentage being based on the total monomer weight.

3,575,914

POLYMERIC MATERIALS WHICH ARE THE REACTION PRODUCT OF (A) A PRIMARY POLYAMINE AND (B) A POLYCARBOXYLIC ANHYDRIDE WHICH IS THE THERMAL CONDENSATION PRODUCT OF (1) AN AROMATIC INTRAMOLECULAR CARBOXYLIC ANHYDRIDE (2) AROMATIC POLYSULFONYL HALIDE (3) OTHER AROMATICS

Frank Long, Wrexham, and Gordon Roy Ensor, Llangollen, Wales, assignors to Monsanto Chemicals Limited, London, England

No Drawing. Filed Jan. 29, 1968, Ser. No. 701,107

Claims priority, application Great Britain, Feb. 3, 1967, 5,362/67

Int. Cl. C08g *20/32*

U.S. Cl. 260—30.2 **14 Claims**

Disclosed herein are polymeric materials characterized by having a plurality of recurring imide linkages and direct linkages between aromatic nuclei. These materials are the polymeric reaction product of (1) a polycarboxylic anhydride which is the thermal condensation product of (a) an aromatic polysulphonyl halide, (b) an aromatic intramolecular carboxylic anhydride, and (c) a third aromatic compound; and (2) a polyamine having at least two primary amino groups per molecule.

3,575,915

DENTURE ADHESIVE COMPOSITIONS

Leo Novak, Union, and Ling Wei and Robert Marchisotto, East Brunswick, N.J., assignors to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed May 26, 1969, Ser. No. 827,934

Int. Cl. A61c *13/10*

U.S. Cl. 260—29.6 **9 Claims**

Disclosed herein is a superior denture adhesive composition comprising polyvinyl acetate, water, ethanol, a mineral hydrocolloid and a plasticizer.

3,575,916

IMPREGNATING AND COATING COMPOSITION FOR POROUS CERAMIC INSULATION

Lawrence G. Bockstie, Jr., Bradford, Pa., assignor to Corning Glass Works, Corning, N.Y.

No Drawing. Filed Dec. 8, 1967, Ser. No. 688,974
Int. Cl. C08g *51/34*
U.S. Cl. 260—33.4 13 Claims

A coating and impregnating composition suitable for providing a water repellent, abrasion, scratch, chip and dirt resistant coating on a ceramic insulating surface comprising a solvent, a suspension of a resin, a silicone and a partially hydrolyzed tetra-alkyl orthosilicate.

3,575,917

METHOD OF STABILIZING CATALYZED ORGANOPOLYSILOXANES

Ales M. Kapral, Chicago, Ill., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Mar. 28, 1969, Ser. No. 811,659
Int. Cl. C08g *51/28, 5/12*
U.S. Cl. 260—33.6 9 Claims

A process for the preparation and a composition of a liquid, catalyzed, stable, curable silicon coating with an unlimited bathlife which is a combination of an organopolysiloxane, a polyalkoxysilane, an alcohol, an ester of orthosilicic acid and an organometal curing catalyst, preferably prepared with the aid of ultrasonic vibrations. Such product is perfectly stable and inactive in a solvent solution but easily activated by evaporation of the solvent to cure rapidly at a low temperature. It produces a superior release coating on paper or in film.

3,575,918

CATALYST AND METHOD OF POLYESTER POLYMERIZATION

David A. Daniels, Kendall Park, N.J., and Rowland L. Orem, Jr., Baltimore, and Edwin E. Lard, Bowie, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Dec. 10, 1968, Ser. No. 782,734
Int. Cl. C08g *51/04, 17/00*
U.S. Cl. 260—40 16 Claims

A catalyst, containing a ketone peroxide, e.g., methyl ethyl ketone peroxide, and an organic non-ketonic diperoxide, e.g., 2,5-dimethyl-2,5-bis(2-ethyl hexanoyl peroxy) hexane, is used to cure polyester resins containing over 900 p.p.m. of an inhibitor. A small amount of sodium methoxide can be used as part of the catalyst. More specifically, polyester resins containing 900 to 40,000 p.p.m. of inhibitors can be cured within 10 minutes to 24 hours with the novel catalyst.

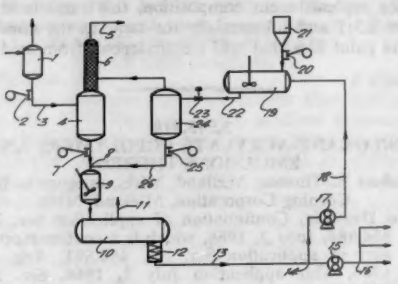
3,575,919

METHOD FOR CONTINUOUS PIGMENTATION OF POLYESTERS IN A CONTINUOUS CONDENSATION PROCESS

Walter Busweiler, Hanau am Main, and Heinz Schätzle, Dornigheim am Main, Germany, and Bernhard Stoll, Domat-Ems Grisons, Switzerland, assignors to Inventa A.G. fur Forschung und Patentverwertung, Zurich, Switzerland

Filed May 12, 1969, Ser. No. 823,641
Claims priority, application Switzerland, May 17, 1968, 8,622/68
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 8 Claims

A method for the pigmentation of a polyester in a continuous polymerization process is disclosed. The polyester is condensed to form a stream of precondensate. The precondensate is then further condensed to form a stream of high polycondensate. A partial stream of high polycondensate is branched off from the high polycondensate stream and pigmented. The pigmented partial stream is then combined and mixed with the precondensate stream.



Alternatively, the pigmented partial stream is polycondensed, then combined and mixed with the high polycondensate stream.

3,575,920

VULCANIZABLE COMPOSITIONS OF AN OLEFIN POLYMER OR COPOLYMER AND VULCANIZED ARTICLES OBTAINED THEREFROM

Giuliano Ballini and Carlo Bujtar, Ferrara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation-in-part of application Ser. No. 492,860, Oct. 4, 1965, which is a continuation-in-part of application Ser. No. 483,843, Aug. 30, 1965. This application Feb. 12, 1968, Ser. No. 705,264
Int. Cl. C07c *43/30;* C08k *1/32*
U.S. Cl. 260—41 11 Claims

Vulcanizable composition of elastomeric polymer, reinforcing filler, free-radical acceptor and organic peroxy-ether free-radical generator wherein carbon atom bound to both ether and peroxy radical is substituted with member selected from alkyl, cycloalkyl and aryl radicals and contains no hydrogen substituent, and vulcanized article obtained therefrom.

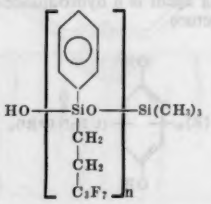
3,575,921

ORGANOSILOXANE POLYMERS

Chi-long Lee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Dec. 18, 1968, Ser. No. 784,876
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 6 Claims

Linear organosiloxane polymers containing fluorinated alkyl substituents, for example



are disclosed.

The polymers are useful as lubricants.

3,575,922

SILICON-, NITROGEN- AND OXYGEN-CONTAINING HIGH TEMPERATURE RESISTANT POLYMERS AND PROCESS

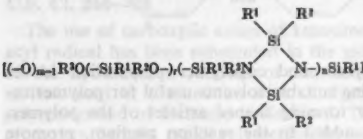
Walter Fink, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 680,981, Nov. 6, 1967, which is a continuation-in-part of abandoned application Ser. No. 595,033, Nov. 17, 1966. This application June 27, 1969, Ser. No. 837,339

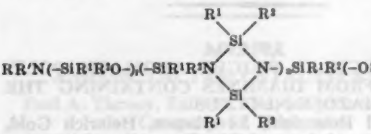
Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 22 Claims

Compounds of the formula



made by reacting a compound $R^3(OH)_m$ with a compound



3,575,923

AQUEOUS PROCESS FOR THE PREPARATION OF POLYIMIDE RESINS

Robert T. Jones, Pelham, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 11, 1968, Ser. No. 767,001

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 13 Claims

Disclosed herein is an aqueous process for the preparation of polyimide resins which process comprises reacting in an aqueous medium:

(1) benzophenone tetracarboxylic dianhydride or benzophenone tetracarboxylic acid and

(2) a water soluble polyamine having at least two primary amino groups per molecule

at temperatures of at least 60° C. for a time sufficient to form recurring imide units in the polymer.

3,575,924

CROSS-LINKED POLYIMIDES

Michel Bargain, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed July 8, 1968, Ser. No. 743,010

Claims priority, application France, July 12, 1967, 114,135

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 4 Claims

The invention provides novel cross-linked polyimides made by reacting a dianhydride with a molar excess of diamine, reacting the product with an unsaturated anhydride to produce an unsaturated polyamide, and heating the latter to produce the cross-linked polyimide.

3,575,925

PHOTOSENSITIVE COATING SYSTEMS

Martin Skoultchi, Somerset, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed June 17, 1968, Ser. No. 737,281

Int. Cl. C08f *15/18, 37/06*

U.S. Cl. 260—47 7 Claims

Ethylenically unsaturated derivatives of substituted benzoic acids, phenols and naphthoic acids which are prepared by means of a method involving reacting the substituted acid or phenol with an ethylenically unsaturated reagent such as glycidyl acrylate and glycidyl methacrylate. The resulting monomers may, thereafter, be homo- or copolymerized with a wide variety of conventional ethylenically unsaturated, i.e. vinyl, monomers. As a result of the presence of such monomers, the resulting homo- and copolymers are sensitive to external stimuli such as ultra-violet and visible light and will readily cross-link upon exposure to such stimuli. Organic solvent solutions or aqueous emulsions of these copolymers may be deposited upon solid substrates thereby providing photosensitive coating systems which are suitable for use in the lithographic and chemical milling fields.

3,575,926

PROCESS FOR CURING POLYEPOXIDES WITH AN ALIPHATIC POLYAMINE IN THE PRESENCE OF A N - (AMINOALKYL)PIPERAZINE DICYANDIAMIDE AND AN IMIDAZOLE

James Donald Joyce, North Plainfield, and Lawrence Charles Reilly, Clark, N.J., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 14, 1968, Ser. No. 768,615

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 9 Claims

A process for room temperature curing polyepoxides, such as glycidyl polyethers of polyhydric phenols is disclosed. This process comprises mixing and reacting a polyepoxide with an aliphatic polyamine in the presence of an N-(amino alkyl)piperazine, dicyandiamide and an imidazole. Use of the process for preparing adhesive compositions is also disclosed.

3,575,927

BROMINATED POLYESTERS

Winston J. Jackson, Jr., and John R. Caldwell, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 686,740, Nov. 29, 1967. This application June 27, 1969, Ser. No. 837,323

Int. Cl. C08g *17/14*

U.S. Cl. 260—47 17 Claims

Polyesters having improved resistance to burning prepared by contacting a solution of the polyester with a brominating agent in the presence of a chlorinating agent, the molar ratio of bromine atoms to chlorine atoms being greater than 1:1 whereby the polyester is halogenated substantially uniformly throughout.

3,575,928

HIGH MOLECULAR WEIGHT LINEAR AROMATIC POLYESTER AMIDES

Gunther Lenz and Heinrich Krimm, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 15, 1969, Ser. No. 850,645

Claims priority, application Germany, Aug. 24, 1968, P 17 95 224.8

Int. Cl. C08g *20/30*

U.S. Cl. 260—47 8 Claims

High molecular weight linear aromatic polyester amides obtained by polycondensation of polynuclear aromatic aminophenols, the aromatic nuclei of which are linked together by alkylene or cycloalkylene radical or by oxygen or sulfur, with aromatic dicarboxylic acid derivatives, the polyester amides being soluble in numerous organic solvents.

3,575,929
ACETYLENE-QUATERNARY AMMONIUM COMPOSITIONS
Loyd W. Jones, Tulsa, Okla., assignor to Pan American Petroleum Corporation, Tulsa, Okla.
No Drawing. Filed Dec. 31, 1964, Ser. No. 422,528
Int. Cl. C07c *87/30*
U.S. Cl. 260—567.6 3 Claims

Acetylene or derivatives thereof are contacted with quaternary ammonium compounds to produce compositions of matter having biocidal activity.

3,575,930
POLYOXYMETHYLENE GLYCOL POLYMERS
Kornelius Dinbergs, North Royalton, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 517,126, Dec. 28, 1965. This application Dec. 12, 1968, Ser. No. 783,416
Int. Cl. C08g *22/14*
U.S. Cl. 260—67 6 Claims

Low molecular weight polyoxymethylene glycols including low molecular weight paraformaldehyde are reacted with excess organic diisocyanate in solution to form isocyanate terminated materials. The products are moldable, have good tensile properties and storage life, and they can be converted to polyurethane materials by reaction with diols or amines.

3,575,931
POLYETHYLENE TEREPHTHALATE MOLDING COMPOSITIONS CONTAINING DISPERSIBLE NUCLEATING AGENTS
Norman Sherman, Succasunna, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
No Drawing. Continuation of application Ser. No. 825,123, May 6, 1969. This application Apr. 6, 1970, Ser. No. 23,098
Int. Cl. C08g *17/06*
U.S. Cl. 260—75 9 Claims

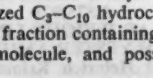
Polyethylene terephthalate containing dispersible nucleating agents which are solids up to 140° C. and which melt below 225° C. such as metallic stearates, chlorides and highly polar organic compounds can be injection molded. Shaped articles have improved impact resistance.

3,575,932
OXIDIZED ASPHALT RESINS AS MONOMERS FOR THE PRODUCTION OF POLYESTERS
John A. Hedge, Wilmington, Del., and Charles E. Scott, Yardley, Pa., assignors to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed Jan. 25, 1968, Ser. No. 700,355
Int. Cl. C08g *17/04*
U.S. Cl. 260—75 12 Claims

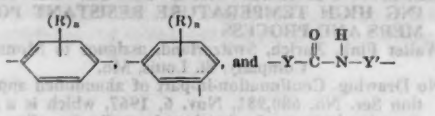
A crosslinked polyester is prepared by mixing and curing in the presence of an acid catalyst a composition of a polyol and an oxidized C_3–C_{10} hydrocarbon-soluble fraction of asphalt, said fraction containing a plurality of carboxyl groups per molecule, and possibly sulfonic acid groups.

3,575,933
PROCESS FOR PREPARING BENZAMIDE POLYMERS
Erhard F. Hoegger, John R. Schaefgen, and Curtis W. Stephens, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Dec. 28, 1967, Ser. No. 694,041
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 15 Claims

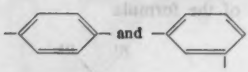
A process preparing benzamide polymers by reacting monomeric aromatic thionylamines of the formula:



wherein X is selected from the group consisting of:



wherein R is a monovalent radical which is inert in the polymerization reaction, *n* is a cardinal number from 0 to 4 and, Y and Y′ are individually selected from the group consisting of:



Both homopolymer and copolymer preparation is described, including suitable solvents useful for polymerization and/or for forming shaped articles of the polymer. Suitable bases, added to the reaction medium, promote the formation of high viscosity polymer.

3,575,934
HIGH MOLECULAR WEIGHT AROMATIC POLYAMIDES FROM DIAMINES CONTAINING THE BENZOTRIAZOLE NUCLEUS
Friedrich-Karl Rosendahl, Leverkusen, Heinrich Gold, Cologne-Stammheim, and Otto Bayer, Burscheid, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 15, 1968, Ser. No. 721,176
Claims priority, application Germany, Apr. 24, 1967, F 52,227
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 2 Claims

The invention relates to high molecular weight aromatic polyamides having high melting points and being soluble in polar organic solvents, having recurring structural units containing N-2-phenylbenzotriazole ring systems, and to a process for their production by condensation of aromatic dicarboxylic acid dihalides with aromatic diamines containing said N-2-phenylbenzotriazole ring systems.

3,575,935
POLYAMIDE MOLDING PLASTICS
Edward U. Elam, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Aug. 8, 1968, Ser. No. 751,039
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 4 Claims

Polyamides useful as molding plastics are derived from (A) at least one aromatic or alicyclic dicarboxylic acid and (B) 4,4-dimethyl-1,7--heptanediamine and/or 4-methyl-4-ethyl-1,7-heptanediamine.

3,575,936
CHEMICAL AND HEAT CONVERSION OF POLYAMIDE-ACIDS TO POLYIMIDES
Frank J. Dinan, Eggertsville, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation of application Ser. No. 537,005, Mar. 24, 1966. This application Feb. 10, 1969, Ser. No. 800,355
Int. Cl. C08g *20/32*
U.S. Cl. 260—78 17 Claims

The chemical and heat conversion of a polyamide-acid to the corresponding polyimide, using as the chemical converting agent an N-acyl azole compound, having a 5-membered heterocyclic ring containing 2 through 4 nitrogen atoms and two double bonds.

3,575,937

IONIC POLYMERIZATION OF LACTAMS WITH A DERIVATIVE OF A CARBOXYLIC ESTER OF A KETOXIME AS PROMOTER

Johan A. Bigot, Beek, Limburg, Johannes van Mourik, Geleen, and Johannes van Beveren, Sittard, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed July 24, 1967, Ser. No. 655,270

Claims priority, application Netherlands, Aug. 4, 1966, 6610959

Int. Cl. C08g 20/10

U.S. Cl. 260—78 5 Claims

The use of carboxylic esters of ketoximes, in which an acyl radical has been substituted in the molecule for one of the hydrocarbon radicals of the ketoxime, as promoters, used in conjunction with catalysts, in the ionic polymerization of lactame, is disclosed. The use of such promoters permits rapid polymerization with high yields of amide polymers, which are useful in the production of molded products.

3,575,938

ANIONIC LACTAM CATALYST SYSTEM

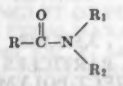
Paul A. Tierney, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 565,076, July 14, 1966. This application Jan. 8, 1969, Ser. No. 789,946

Int. Cl. C08g 20/12

U.S. Cl. 260—78 9 Claims

In the base-catalyzed substantially anhydrous anionic lactam polymerization, the improvement which comprises dissolving the metal lactam catalyst in an N,N-disubstituted amide of the formula



where R is hydrogen or any monovalent hydrocarbon radical, R_1 and R_2 can be any monovalent hydrocarbon radical and where any two of the R's can be joined together to form a heterocyclic ring, prior to adding said metal lactam catalyst to the monomeric lactam to be polymerized. Also described is a solution of a metal lactam in the N,N-disubstituted amides described above as well as a process for preparing the solution comprising reacting the metal or metal compound with a lactam in the presence of the N,N-disubstituted amide.

3,575,939

STIFF, WORKABLE POLYAMIDES BY BLENDING WITH CYANURIC ACID

Rajindar K. Kochhar, Overland Park, Kans., Harry D. Anspon, Sewickley, Pa., and Bert H. Clampitt, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed June 4, 1968, Ser. No. 734,245

Int. Cl. C08g 20/38

U.S. Cl. 260—78 3 Claims

Several polymers of nylon have lower melt viscosity and higher stiffness values with no appreciable sacrifice in other properties when blended with small amounts of cyanuric acid.

3,575,940

FLUOROCARBON COMPOUNDS AND POLYMERS THEREOF

Atsuo Katsushima, Fuse-shi, Iwao Hisamoto, Suita-shi, and Shoshin Fukui, Takahisa Kato, and Masayuki Nagai, Osaka-fu, Japan, assignors to Daikin Kogyo Kabushiki Kaisha, Kita-ku, Osaka-shi, Japan

No Drawing. Continuation-in-part of application Ser. No. 515,450, Dec. 21, 1965. This application Jan. 4, 1968, Ser. No. 695,549

Claims priority, application Japan, Dec. 30, 1964, 40/63, 40/65, 40/66; Nov. 1, 1965, 40/67,123

Int. Cl. C08f 3/62, 15/00

U.S. Cl. 260—78.4 7 Claims

Fluorocarbon compounds having the formula:

$$R_fCH_2CH(CH_3)_mOCCR$$

$$(CH_2)_pOOC(CH_2)_nCR'=CH_2$$

wherein R_f is a perfluoroalkyl group having 3 to 21 carbon atoms, R is an alkyl group having 1 to 18 carbon atoms, R' is one member of the group consisting of hydrogen and methyl group, m is an integer of from 0 to 10, p is an integer of from 0 to 10 when m is 0 and p is 0 when m is 1 to 10, and n is an integer of from 0 to 10, and polymers derived therefrom.

3,575,941

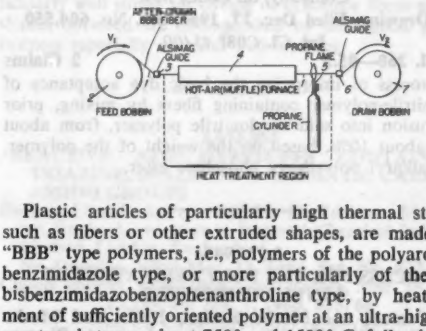
ULTRASTABLE POLYMERS OF BBB TYPE, ARTICLES SUCH AS FIBERS MADE THEREFROM, AND HIGH TEMPERATURE PROCESS FOR FORMING SUCH POLYMERS AND ARTICLES

Jay M. Steinberg, Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Original application Nov. 7, 1967, Ser. No. 681,136, now Patent No. 3,523,151, dated Aug. 4, 1970. Divided and this application Aug. 18, 1969, Ser. No. 850,889

Int. Cl. C08g 33/02, 53/28

U.S. Cl. 260—78.4 2 Claims



Plastic articles of particularly high thermal stability, such as fibers or other extruded shapes, are made from "BBB" type polymers, i.e., polymers of the polyaroylenebenzimidazole type, or more particularly of the polybisbenzimidazobenzophenanthroline type, by heat treatment of sufficiently oriented polymer at an ultra-high temperature between about 750° and 1500° C. following preheating at an intermediate temperature in the 500° to 700° C. range. As a result of such a high-temperature treatment a new kind of polymer structure is obtained which is attributed to the splitting out of the carbonyl groups from the BBB polymer molecule.

3,575,942

METHOD OF RECOVERING A POLYMERIC PRODUCT

C. Michael Fontana, Washington, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Filed July 25, 1968, Ser. No. 747,431

Int. Cl. C08f 1/88, 19/00

U.S. Cl. 260—78.5 4 Claims

A method of recovering and purifying polymeric products comprising heating a polymer reaction product in

the presence of sufficient water to form at least a partial solution of the polymer in water and cooling to effect a phase separation into a lower liquid phase containing concentrated polymer and an upper liquid phase containing reaction product impurities in water. The method is particularly adapted to the separation and purification of copolymers of maleic anhydride and derivatives thereof copolymerized with given conjugated dienes.

3,575,943

PROCESS FOR THE PREPARATION OF ACRYLONITRILE COPOLYMERS

Jozef L. M. van der Loos, Geleen, Johannes H. Ottenheym, Sittard, Franciscus A. Busschers, Geleen, and Peter J. M. W. Claassen, Amstenrade, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed June 25, 1969, Ser. No. 836,577

Claims priority, application Netherlands, June 25, 1968, 6808960

Int. Cl. C08f *15/36, 15/38, 15/40*

U.S. Cl. 260—78.5 **7 Claims**

Copolymers having improved dyeing characteristics are prepared by copolymerizing acrylonitrile with the α-methylene glutaric acid, alone or in combination with the monohydrocarbyl ester thereof or with the ester alone in such amounts that the resulting copolymer comprises 0.1–10 percent by weight of said acid or ester, or combination thereof, and at least 35 percent by weight acrylonitrile.

3,575,944

PROCESS OF IMPROVING THE BASIC DYE ACCEPTANCE OF ACRYLONITRILE-POLYMER CONTAINING FIBERS BY USING AN ALKARYL POLYETHOXY PHOSPHATE ESTER

Ernest F. Stroh, Decatur, Ala., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 27, 1966, Ser. No. 604,550

Int. Cl. C08f *45/00*

U.S. Cl. 260—85.5 **2 Claims**

A process of improving the basic dye acceptance of acrylonitrile-polymer containing fibers by mixing, prior to extrusion into said acrylonitrile polymer, from about 0.5 to about 10%, based on the weight of the polymer, of an alkaryl polyethoxy phosphate ester.

3,575,945

PROCESS FOR THE POLYMERIZATION OF VINYL COMPOUNDS

Aldo Cantoni and Moshe Kreisel, Haifa, and Moshe Bar Guri, Kfar Hassidim, Israel, assignors to Electrochemical Industries (Frutarom) Ltd., Haifa, Israel

No Drawing. Filed Apr. 17, 1968, Ser. No. 721,934

Claims priority, application Israel, Dec. 14, 1967, 29,131

Int. Cl. C08f *1/11, 1/60, 3/30*

U.S. Cl. 260—92.8 **8 Claims**

A process for the suspension polymerization of vinyl derivatives, especially vinyl chloride, in which dialkyl or dialkenyl peroxydicarbonates used as polymerization initiators are produced in situ in the polymerization mixture in the presence of an alkali metal base by the interaction of hydrogen peroxide with an alkyl or alkenyl haloformate, which latter is used in a stoichiometric excess over the hydrogen peroxide of the order of 1.5 to 8 times, preferably 2 to 4 times. A conventional organic peroxide such as dilauroyl peroxide may be used in addition as a secondary polymerization initiator.

3,575,946

METHOD OF PREPARING SOLUBLE POLYMERS OF ETHYLENE GLYCOL

Richard Chromecek, Miloslav Bohdanecky, Karel Kliment, Jaroslava Otoupalova, Vladimir Stoy, Miroslav Stol, and Zdenek Tuzar, Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

No Drawing. Filed May 17, 1967, Ser. No. 639,021

Claims priority, application Czechoslovakia, May 24, 1966, 3,489/66

Int. Cl. C08f *15/26*

U.S. Cl. 260—86.1 **8 Claims**

Ethylene glycol monomethacrylate and monoacrylate contaminated with up to 50% of the corresponding bismethacrylates or bisacrylates may be fully polymerized to solvent-soluble polymers in all solvent media capable of strongly swelling the cross-linked copolymer which would be formed if the same monomer mixture were polymerized in the absence of solvent.

3,575,947

CYCLIC OLEFIN CONVERSION

Donald L. Crain, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 517,932, Jan. 3, 1966. This application Nov. 21, 1968, Ser. No. 777,916

Int. Cl. C08f *7/02*

U.S. Cl. 260—93.1 **14 Claims**

Cyclic olefinic hydrocarbons including mono- and polyenes are converted into polyunsaturated hydrocarbons of higher molecular weight by contacting the olefin with a catalyst active for the disproportionation of acyclic olefins having three or more carbon atoms into other olefins of both higher and lower molecular weight.

3,575,948

FORMING SMALL PARTICLES OF POLYPROPYLENE BY DIRECT POLYMERIZATION

Harry W. Blunt, Claymont, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Mar. 29, 1968, Ser. No. 717,403

Int. Cl. C08f *1/56, 3/10*

U.S. Cl. 260—93.7 **5 Claims**

Polypropylene particles of less than 15μ are prepared by direct polymerization using a specially treated catalyst. The special catalyst treatment comprises preliminarily treating a trivalent titanium containing catalyst by polymerizing a small amount of ethylene, propylene, or butene-1 therewith at elevated temperature.

3,575,949

METHOD FOR IN-MOLD TUBE FORMATION

Frederick Harold Humphrey, Markham, Ontario, Canada, assignor to Polypump Curacao N.V., Willemstad, Curacao, Netherlands Antilles

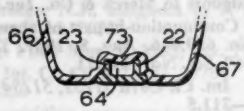
Filed May 5, 1969, Ser. No. 821,829

Int. Cl. B29c *17/07*

U.S. Cl. 264—94 **10 Claims**

A method of incorporating into the wall of a blow-molded plastic container a tubular passage which can also include a pump means, a nozzle at the upper end, and a liquid intake aperture at the other end. An elongated channel-defining element is positioned against the inside

wall of a mold cavity and then the plastic container is blow-molded against it. The material forming the container wall seals the channel to form a tube, and bonds itself to the material of the channel-defining element.



3,575,950

PROCESS FOR PREPARING POLYETHYLENE HAVING IMPROVED FILM FORMING PROPERTIES

Willard P. Gleason, Jesse R. Goza, Jr., and Jerald G. Park, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 26, 1968, Ser. No. 762,851
Int. Cl. C08f *1/60, 3/04*
U.S. Cl. 260—94.9 6 Claims

A three-stage process for preparing polyethylene employing at least one peroxide catalyst in each stage. The process produces a novel polyethylene having a density of about 0.922 to about 0.932 which finds particular utility in forming polyethylene films having improved optical properties.

3,575,951

REACTION OF SINGLET OXYGEN WITH RAW MATERIALS FROM NAVAL STORES

Walter H. Schuller and Ray V. Lawrence, Lake City, Fla., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Nov. 14, 1968, Ser. No. 777,549
Int. Cl. C01f *1/00*
U.S. Cl. 260—97.5 9 Claims

Levopimaric acid transannular peroxide and a plurality of mixed peroxides were prepared by the reaction of singlet oxygen with levopimaric acid, pine gum, gum rosin, the sodium salt of pine gum, partially neutralized gum rosin, tall oil rosin, wood rosin, and other naval stores products.

3,575,952

TALL OIL RECOVERY

Charles W. Morris, Jacksonville, and Gerald S. Watkins, Apalachicola, Fla., assignors to SCM Corporation, Cleveland, Ohio

Filed Oct. 2, 1969, Ser. No. 863,774
Int. Cl. C09f *1/02*
U.S. Cl. 260—97.7 13 Claims

A process for removing lignin salts from crude tall oil soap skimmings is disclosed. The soap skimmings are washed or extracted with an aqueous salt solution. In the preferred embodiment the salt solution is the aqueous alkalized "spent acid" from the crude tall oil acidulation reaction. This extraction reduces the lignin concentration in the lignin concentration in the soap skimming phase and thereby promotes a better yield and better quality of crude tall oil upon acidulation. A viscosity controlled phase separation technique is employed in separating the viscous soap skimmings from the less viscous aqueous washing liquors.

3,575,953

SULPHUR DYESTUFFS

Djavad Razavi, Paris, France, assignor to Ugine Kuhlmann, Paris, France

No Drawing. Filed May 15, 1968, Ser. No. 729,369
Claims priority, application France, May 17, 1967, 106,643
Int. Cl. C09b *49/06, 49/12*
U.S. Cl. 260—128 1 Claim

A sulphur dyestuff which comprises treating a phthalocyanine which is free from amino groups, a dioxazine, an anthraquinone derivative or substituted or unsubstituted polycyclic aromatic hydrocarbon, in solution or suspension in sulphur chloride, with chlorosulphonic acid at a temperature between 90° C. and 200° C. inclusive. The dyestuffs are useful for the dyeing of cellulosic fibres.

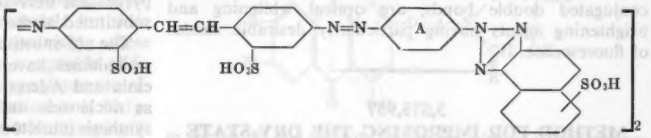
3,575,954

AZO DYESTUFFS DERIVED FROM STILBENE AND CONTAINING A NAPHTHOTRIAZOLO GROUP

Marcel Georges Jirou and Vasili Urne, Rouen, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed Mar. 21, 1968, Ser. No. 714,765
Claims priority, application France, Mar. 24, 1967, 100,185, Patent 1,523,475
Int. Cl. C09b *43/08;* D06p *1/06, 3/60*
U.S. Cl. 260—157 3 Claims

Azo dyestuffs of the formula:



wherein the benzene nucleus A is unsubstituted or substituted by one or more alkyl and/or alkoxy groups, and process for their prepartion. These dyestuffs are particularly well suited for dyeing of cellulosic fibres and the shades obtained are distinguished by their good general fastness especially to water and washing.

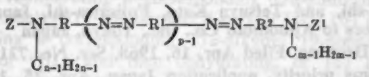
3,575,955

REACTIVE AZO DYESTUFFS CONTAINING TRIAZINE, DIAZINE OR ALIPHATIC CARBOXAMIDO GROUPS

Herbert Francis Andrew and Neville Jackson, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 14, 1966, Ser. No. 533,850
Claims priority, application Great Britain, Mar. 29, 1965, 13,259/65; Jan. 7, 1966, 825/66
Int. Cl. C09b *62/08, 62/24, 62/40*
U.S. Cl. 260—153 7 Claims

Azo dyestuffs of the general formula



wherein R is a radical selected from the group consisting of phenylene, monosulphophenylene and disulphonaphthalene, R^1 is a radical selected from the group consisting of dimethyl - 1,4-phenylene, monomethyl monomethoxy-1,4-phenylene and monosulpho-1,4-naphthylene, R^2 is a radical selected from the group consisting of monosulpho-1,4-naphthylene and 1,4-phenylene which may be substituted by up to two radicals selected from the group consisting of a lower alkyl, lower alkoxy, carboxylic acid, lower alkanoylamido and ureido, *m*, *n* and *p* each independently have a value of 1 or 2, Z and Z^1 are the

same or different cellulose-reactive substituents selected from the group consisting of mono- and di-chloro-s-triazine, mono- and dibromo - s - triazine, trichloropyrimidine, 5-cyano-dichloropyrimidine, 5 - cyano - dibromopyrimidine, β - chloro - propionyl, chloroacetyl, 2,4-dichloroquinaozline-6- and 7-carbonyl, 2,3 - dichloroquinoxaline-5- and 6-carbonyl, 2,4 - dichloropyrimidine - 5-carbonyl and acrylyl. These dyestuffs are valuable for coloring cellulose textile materials and can be applied thereto by a dyeing or printing process. The azo dyestuff reacts with the cellulose to give colorings having very good fastness to light and to wet treatments.

3,575,956

2-SUBSTITUTED-BENZ-X-AZOL-6-YLAZO-AMINONAPHTHALENE COMPOUNDS

Nathan N. Crounse, Cincinnati, Ohio, assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed July 24, 1967, Ser. No. 655,339

Int. Cl. C09b *27/00, 29/36;* **D06l** *3/12*

U.S. Cl. 260—157 **18 Claims**

2-benzoxazol - 6 - yl-2H-naphtho[1,2-d]triazoles, 2-benzothiazol-6-yl-2H-naphtho[1,2 - d]triazoles and 2-benzimidazol-6-yl-2H-naphtho[1,2-d]triazoles, having attached at the 2-position of the benz-X-azol-6-yl ring thereof a substituent of from 8–18 carbon atoms and 4–8 conjugated double bonds, are optical whitening and brightening agents having particularly desirable shades of fluorescence.

3,575,957

METHOD FOR IMPROVING THE DRY STATE TINCTORIAL STRENGTH OF A WATER-SOLUBLE DYE

Walter R. Demler, Hamburg, Percy Perletz, Kenmore, and James R. Price, Amherst, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Aug. 21, 1967, Ser. No. 661,831

Int. Cl. C07c *107/60;* **C09b** *29/38, 43/00*

U.S. Cl. 260—163 **15 Claims**

The method involves intimately contacting a water soluble dye with an inert, water soluble, low boiling organic solvent and then evaporating the solvent. The treatment may be applied to dye which is in substantially dry, granular form and to dye in the form of an aqueous mixture. Dyes treated in this manner have greatly improved tinctorial strength in the dry state and therefore this process is particularly useful for dyes which are used to color dye mixes.

3,575,958

PREPARATION OF NUCLEOSIDE-5'-PHOSPHORAMIDATES

Noriko Nagasawa, Tokyo, Masaharu Yoshikawa, Kawasaki-shi, and Tetsuya Kato, Fujisawa-shi, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Apr. 16, 1968, Ser. No. 721,566

Claims priority, application Japan, Apr. 25, 1967, 42/26,446

Int. Cl. C07d *51/32, 51/54*

U.S. Cl. 260—211.5 **6 Claims**

Nucleosides or 2',3'-O-protected nucleosides are readily converted to the corresponding dichlorophosphates by reaction with phosphorus oxychloride. The dichlorophosphates, when partly hydrolyzed to the monochlorophosphates, can be reacted with ammonia or amines at high yields to the ammonium or amine salts of the 5'-phosphoramidates in a solvent medium essentially consisting of trialkyl phosphates or tri-haloalkyl phosphates.

3,575,959

5'-SUBSTITUTED RIBOFURANOSYL NUCLEOSIDES

Tsung-Ying Shen, Westfield, and William V. Ruyle, Scotch Plains, N.J., and Thomas Neilson, Burlington, Ontario, Canada, assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 659,046, Aug. 8, 1967. This application May 13, 1969, Ser. No. 824,271

Int. Cl. C07d *51/52, 51/54*

U.S. Cl. 260—211.5 **8 Claims**

Novel (5-substituted - 5 - deoxyribofuranosyl) - purines and pyrimidines where the 5-substituent is acetylthio, thiocyano, azido, alkylamino, or fluoro, are prepared by reaction of a (2,3-O-isopropylidene - 5 - O - tosylribofuranosyl)-purine or pyrimidine with an alkali metal thioacetate, thiocyanate, azide, alkylamino, or fluoride, respectively. The 5'-azido-group is then hydrogenated to a 5'-amino-group.

The (5-amino-5-deoxy - 2,3 - O - isopropylidene-ribofuranosyl) purine or pyrimidine is then reacted with an alkanoyl halide or anhydride, adamatoyl halide, ethyl chloroformate or potassium cyanate to produce the corresponding 5-alkanoylamino, adamantoylamido, N-carboethoxyamino, ureido, or cyanamido-derivative, respectively. The 5-cyanamido-derivative is further reacted with ammonia in an amine to give the corresponding 5-guanidino derivative. The purine derivatives may be substituted at the 2,6-positions of the purine nucleus and the pyrimidine derivatives (e.g. cytidine or uridine) may be substituted at the 5-position of the pyrimidine nucleus.

The (5-substituted-5-deoxyribofuranosyl)-purines and pyrimidines have antiviral activity against Herpes, Vaccinia and Adeno II viruses, and are also useful in vitio as nucleoside antimetabolites, and as nucleic acid biosynthesis inhibitors.

3,575,960

ESTERIFICATION OF CELLULOSE WITH CARBONIC CARBOXYLIC ANHYDRIDES

Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Filed July 17, 1967, Ser. No. 653,632

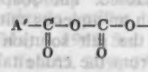
Int. Cl. C08b *3/20;* **D06m** *13/20*

U.S. Cl. 260—224 **15 Claims**

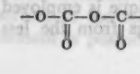
A process for esterification of cellulose wherein a cellulosic material is reacted under mild conditions and in the absence of a catalyst with mixed carbonic carboxylic anhydrides having the characteristic group

whereby a monovalent or divalent carbon acyl group is bonded to the cellulose by replacing active hydrogen, with consequent ester formation, and there is released as by-products an alcohol or glycol and carbon dioxide.

In addition, novel compounds of the carbonic carboxylic anhydride class which are useful in the formation of cellulose esters according to the above-mentioned process, and which are characterized by the formula



wherein A' is polyfluoroalkyl or polyfluoroalkoxyalkyl, R'' is a lower alkylene group, and G' is selected from the group consisting of hydrogen and



3,575,961

POLYFLUOROALKYLAZIRIDINES AND THEIR PRODUCTION

Giuliana C. Tesoro, Dobbs Ferry, N.Y., and Richard Ring, Woodridge, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Filed Mar. 9, 1962, Ser. No. 178,572
Int. Cl. C07d *23/02, 23/06*
U.S. Cl. 260—239 6 Claims

Fluorinated aziridine compounds are disclosed which are the addition or substitution products of the reaction of an ethyleneimine and fluorine-containing compound. One or two aziridine groups may be present in the compounds which are useful for the chemical modification of textile materials.

3,575,962

N'-SUBSTITUTED N-ARYLSULFONYL UREAS

Henri Dietrich, Arlesheim, Switzerland, assignor to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Filed Sept. 13, 1967, Ser. No. 667,363
Int. Cl. C07d *41/08*
U.S. Cl. 260—239 17 Claims

N - arylsulfonyl-1,2,4,5-tetrahydro-3-H-3-benzazepine-3-carboxamides and pharmaceutically acceptable salts thereof with bases, which compounds have useful hypoglycaemic action, as well as starting materials for their production; therapeutic compositions containing these carboxamides or their pharmaceutically acceptable addition salts and processes of producing hypoglycaemic effects in mammals. An illustrative embodiment is N-(p-tolylsulfonyl) - 1,2,4,5 - tetrahydro-3H-3-benzazepine-3-carboxamide.

3,575,963

5,5aβ,13,13aβ - TETRAHYDRO-5β,13β-DIHYDROXY-8H,16H - 7a,15a - (EPITRITHIO OR EPITETRATHIO) - 7H,15H - BISOXEPINO[3',4':-4,5]PYRROLO [1,2-a:1',2'-d]PYRAZINE-7,15-DIONE, DIACETATE

Keith Chadwick Murdock and Robert Bruce Angier, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 747,429, July 25, 1968. This application Jan. 22, 1969, Ser. No. 793,163
Int. Cl. C07d *93/36, 93/00*
U.S. Cl. 260—239.3 6 Claims

This disclosure describes 5,5aβ,13,13aβ-tetrahydro-5β,13β-dihydroxy-8H, 16H-7a,15a-(epitritho or epitetrathio)17H,15H - bisoxepino[3',4':4,5]pyrrolo[1,2 - a:1', 2'-d]pyrazine-7,15-dione, diacetate, new compounds useful as antiviral agents.

3,575,964

PRODUCTION OF LACTAMS

Edwin George Edward Hawkins, Lower Kingswood, Surrey, England, assignor to BP Chemicals (U.K.) Limited, London, England

No Drawing. Filed Dec. 9, 1968, Ser. No. 782,407
Claims priority, application Great Britain, Dec. 15, 1967, 42,696/67, 57,228/67; Aug. 15, 1968, 38,973/68
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 7 Claims

In the catalytic cleavage 1,1'-peroxydicyclohexylamine, to give caprolactam the majority of the cycloalkanone coproduct is continuously removed by distillation from the mixture undergoing cleavage.

3,575,965

PROCESS FOR THE PREPARATION OF 11-CHLORO-8,12b-DIHYDRO - 2,8 - DIMETHYL-12b-PHENYL-4H - [1,3]OXAZINO[3,2-d] [1,4]BENZODIAZEPINE-4,7 (6H)-DIONE

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,936
Int. Cl. C07d *87/54, 53/06*
U.S. Cl. 260—239.3 3 Claims

A process for the preparation of 11-chloro-8,12b-dihydro - 2,8 - dimethyl - 12b - phenyl - 4H - [1,3]oxazino [3,2-d][1,4]benzodiazepine - 4,7(6H) - dione. This compound is useful as a tranquilizer and sedative for animals, including mammals.

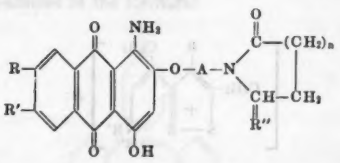
3,575,966

ANTHRAQUINONE DYESTUFFS

Rütger Neeff, Leverkusen, and Gerhard Wolfrum, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 20, 1968, Ser. No. 738,353
Claims priority, application Germany, June 29, 1967, F 52,821
Int. Cl. C07d *41/06;* C07c *49/68*
U.S. Cl. 260—239.3 1 Claim

Dyestuffs of the formula



in which R and R' are hydrogen, chlorine or fluorine; R'' is hydrogen or lower alkyl; A is a straight-chain or branched alkylene group with 2 to 6 carbon atoms which may be interrupted by oxygen and/or sulfur atoms; and *n* is an integer of 1 to 3; and their use in the dyeing and printing of synthetic fiber materials, e.g. polyester, polyamide, cellulose esters, are disclosed. The dyes give good yields and the dyeings exhibit good texture, fastness to light, thermofixing, washing, rubbing and ironing.

3,575,967

17α-AMINOALKYL- AND AMINOALKYNYL-19-NORSTEROIDAL 3,5-DIENES

Kurt W. Ledig, Philadelphia, Donald W. Oliver, West Chester, and Gerhard R. Wendt, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Feb. 5, 1969, Ser. No. 796,909
Int. Cl. C07c *173/10*
U.S. Cl. 260—239.5 39 Claims

13-alkyl-17α-aminoalkynyl- and 17α-aminoalkylgona-3,5-dienes (I) are useful biocidally as amebicides, fungicides and trichomonacides. Compounds (I) are prepared by (a) dehydrating a corresponding 17α-aminoalkynyl- or -aminoalkyl 19-norsteroidal 4-en-3-ol (II); (b) aminoalkylating a corresponding 17α-alkynyl 19-norsteroidal 4-en-3-ol (III) and then dehydrating; or (c) aminoalkylating a corresponding 17α-alkynyl 19-norsteroidal 3,5-diene (IV).

3,575,968

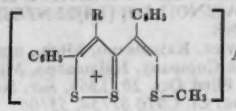
DITHIOLE COMPOUNDS AND PREPARATION

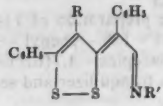
Erwin Klingsberg, Mountainside, Union County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

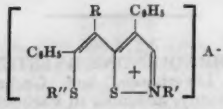
No Drawing. Filed Mar. 12, 1968, Ser. No. 712,384
Int. Cl. C07d *7/00;* C09b *49/00*
U.S. Cl. 260—240 18 Claims

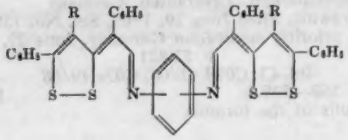
1,2-dithiole or 1,2-dithiolium compounds, useful as dyes or herbicides, of the following formulas where R is hydro-

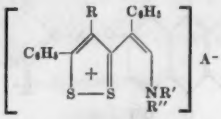
gen or phenyl; R′ is alkyl, cycloalkyl, aralkyl, aryl, heteroaryl; R″ is alkyl; and A⁻ is an anion such as halide:











3,575,969

DESACETOXYCEPHALOSPORIN ANTIBIOTICS

Robert B. Morin and Billy G. Jackson, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 579,222, Sept. 14, 1966, which is a continuation-in-part of application Ser. No. 213,588, July 31, 1962. This application Mar. 4, 1968, Ser. No. 709,927

The portion of the term of the patent subsequent to Apr. 21, 1987, has been disclaimed

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 **3 Claims**

Desacetoxycephalosporin antibiotics containing thienyl or furyl rings in the 7-acylamido moiety of the molecule, e.g., 7 - (α - amino - α - thienylacetamido) - 3 - methyl-Δ^3-cephem-4-carboxylic acid, and pharmaceutically acceptable salts thereof.

3,575,970

PROCESS FOR PREPARATION OF 7-AMINO-CEPHALOSPORANIC ACID COMPOUNDS

Helmut Wilhelm Otto Weissenburger, Rijswijk, and Marcelus Gijsbertus van der Hoeven, Den Haag, The Netherlands, assignors to Koninklijke Nederbandsche Gist-en Spiritusfabriek N.V., Delft, The Netherlands

No Drawing. Continuation-in-part of application Ser. No. 681,002, Nov. 6, 1967, which is a continuation-in-part of application Ser. No. 622,907, Mar. 14, 1967. This application Oct. 20, 1969, Ser. No. 867,888

Claims priority, application Netherlands, Aug. 7, 1967, 6710835; Oct. 11, 1967, 6713809

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 **15 Claims**

A novel process for the preparation of a compound selected from the group consisting of 7-amino-cephalosporanic acid and its derivatives in high yields by chemical removal of the acyl radical of the corresponding 7-acylamino-cephalosporanic compounds which are useful intermediates.

3,575,971

DIOXAZINE COMPOUNDS USEFUL AS STABILIZERS AND PIGMENTS IN PLASTIC MATERIALS

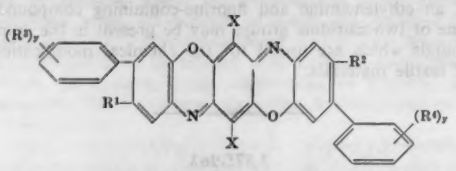
Raymond C. Harris, Gordon C. Newland, and James M. Straley, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 28, 1968, Ser. No. 708,777

Int. Cl. C07d *99/02*

U.S. Cl. 260—246 **5 Claims**

Compounds of the dioxazine series, useful as stabilizers and pigments for plastic materials, which have the following general structure



wherein X is halogen; R^1 and R^2 independently are hydrogen, C_1–C_5 alkyl, or C_1–C_5 alkoxy; R^3 and R^4 independently are hydrogen, halogen, hydroxy, C_1–C_5 alkyl or C_1–C_5 alkoxy; at least one of R^1 and R^3 and at least one of R^2 and R^4 being C_1–C_5 alkoxy; and y is 0–5.

3,575,972

MORPHOLINO CARBONYL GLYOXYLONITRILE OXIMINO DIALKYL CARBAMATES

Harold A. Kaufman, Piscataway, N.J., assignor to Mobil Oil Corporation

No Drawing. Original appplication Dec. 5, 1966, Ser. No. 598,889, now Patent No. 3,843,246, dated Dec. 9, 1969. Divided and this application Apr. 17, 1969, Ser. No. 817,138

Int. Cl. C07d *87/44*

U.S. Cl. 260—247.2 **2 Claims**

Heterocyclic glyoxylonitrile oximino carbamates are useful to control plant growth, particularly the pre-emergence of undesirable grasses. They may be combined with herbicidal carriers and applied to the soil, seeds, seedlings, and to plants.

3,575,973

COMPOUNDS CONTAINING A DINITROFLUORO-METHYL GROUP

Milton B. Frankel, Tarzana, Calif., assignor to North American Rockwell Corporation

No Drawing. Filed June 27, 1966, Ser. No. 563,019

Int. Cl. C07d *55/36;* **C07c** *79/46, 111/00*

U.S. Cl. 260—248 **1 Claim**

New explosive compounds having the group $-(NO_2)_2F$ including nitramines and esters formed from the reactions respectively of $FC(NO_2)_2CH_2OH$ with (1) amines followed by nitration to obtain nitramines and (2) aromatic and heterocyclic acid chlorides to obtain esters.

3,575,974

7-HYDROXYLAMINO-1,3,5-TRIAZAADAMANTANE AND ITS PRODUCTION

Edward B. Hodge, % Commercial Solvents Corp., Terre Haute, Ind., and Charles D. Hurd, 2649 Lawndale Ave., Evanston, Ill. 47531

No Drawing. Filed Nov. 12, 1968, Ser. No. 775,105

Int. Cl. C07d *57/20*

U.S. Cl. 260—248 **3 Claims**

7 - hydroxylamino-1,3,5-triazaadamantane and process for production thereof by reacting tris(hydroxymethyl) nitromethane with ammonia to produce the nitro-adamantane derivative, and reducing same in the presence of

a palladium catalyst to produce the hydroxylamino derivative. The compounds have utility as bacteriostats and fungistats.

3,575,975
PROCESS FOR THE PREPARATION OF 3-AMINOPYRAZINOYLUREAS
Edward J. Cragoe, Jr., Lansdale, and Kenneth L. Shepard, Ambler, Pa., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed July 25, 1968, Ser. No. 747,462
Int. Cl. C07d *51/76*
U.S. Cl. 260—250 13 Claims

A process is described for the preparation of pyrazinoylureas which comprises the hydrolysis of pyrazinoylcyanamides. The products are diuretic and/or saluretic agents.

3,575,976
3-AMINO-1,2,8,9-TETRAAZAPHENALENES
Karl J. Doebel, Ossining, and John E. Francis, Pleasantville, N.Y., assignors to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 718,227, Apr. 2, 1968, which is a continuation-in-part of applications Ser. No. 445,762, Apr. 5, 1965, Ser. No. 539,303, Apr. 1, 1966, and Ser. No. 583,980, Oct. 3, 1966, said Ser. No. 539,303 being a continuation-in-part of application Ser. No. 445,762, and Ser. No. 583,980 being a continuation-in-part of applications Ser. No. 539,303, and Ser. No. 445,767. This application Mar. 24, 1969, Ser. No. 810,007
Int. Cl. C07d *51/02*
U.S. Cl. 260—250 10 Claims

3-amino - 1,2,8,9 - tetraazaphenalenes optionally substituted in the 4, 5, 6, 7 and/or 9 positions and their salts are cardiovascular agents and can be prepared from the corresponding 1,2,8,9-tetraazaphenalenes. Representative embodiments are 3-amino-1,2,8,9-tetraazaphenalene and 3-benzylamino-9-phenyl-1,2,8,9-tetraazaphenalene.

3,575,977
7-ALKYL-2,5-DISUBSTITUTED-7H-PYRROLO-[2,3-d]PYRIMIDINES-6-CARBONITRILES
Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Aug. 14, 1968, Ser. No. 752,486
Int. Cl. C07d *57/14*
U.S. Cl. 260—256.4 4 Claims

The disclosure is directed to 7-alkyl-2,5,6-trisubstituted-7H-pyrrolo[2,3-d]pyrimidiness and to the 4-[(cyanomethyl)alkylamino] - 2 - substituted - 5-pyrimidine carboxylic acid esters which are intermediates in their production. The compounds have central nervous system activity as depressants.

3,575,978
INDUSTRIAL PRODUCTION OF O,S-DIALKOXYCARBONYLTHIAMINE COMPOUNDS
Kanji Tokuyama, Osaka-shi, Takashi Maeda, Kitakatsuragi-gun, and Kenji Ikawa, Osaka-shi, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan
No Drawing. Filed May 16, 1969, Ser. No. 825,435
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.5 20 Claims

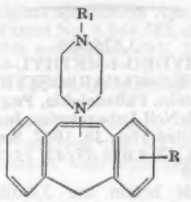
An S-alkali metal salt of thiol type thiamine is reacted with each about 1.0 to about 1.2 mol equivalent of lower alkyl chlorocarbonate, alkali hydroxide and lower alkyl chlorocarbonate in that order respectively in an aqueous medium containing from 0 to about 50 volume/volume percent of halogeno-hydrocarbon of not more than 10 carbon atoms to give high purity of O,S-dialkoxycarbonylthiamine compounds economically and industrially.

3,575,979
7-ALKYL - 5 - METHOXY - 7H-PYRROLO[2,3-d] PYRIMIDINE-6-CARBOXAMIDES AND RELATED COMPOUNDS
Dong H. Kim, Delaware, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 752,486, Aug. 14, 1968. This application June 2, 1969, Ser. No. 829,774
Int. Cl. C07d *51/14*
U.S. Cl. 260—256.4 2 Claims

The disclosure is directed to 7-alkyl-2,5,6-trisubstituted-7H-pyrrolo[2,3-d]pyrimidines and to the 4-[(cyanomethyl)alkylamino]-2-substituted-5-pyrimidine carboxylic acid esters which are intermediates in their production. The compounds have central nervous system activity as depressants.

3,575,980
5H-DIBENZO(a,d)CYCLOHEPTEN-10-YL-PIPERAZINE DERIVATIVES
Michele Mastursi, Naples, Sabino Lembo, Pozzuoli, and Rene Viterbo, Naples, Italy, assignors to Richardson-Merrell S.p.A., Naples, Italy
No Drawing. Filed Mar. 25, 1968, Ser. No. 715,536
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 10 Claims

New en-amines of the formula:

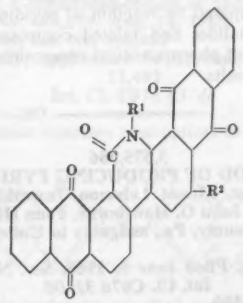


in which R may be hydrogen, halogen, or lower alkyl, and R_1 represents a nitrogen-containing substituent, preferably a carboxamide or a thiocarbamide. These new compounds are useful because of their pharmacological activities which include muscle relaxing, anti-inflammatory, anti-pyretic, analgesic, and sedative action. A preferred method of making the new compounds is described.

3,575,981
DIALKYLATED VAT DYESTUFFS OF THE AMINO DIPHTHALOYL PHENANTHRIDONE SERIES
Charles W. C. Stein, Westfield, N.J., assignor to GAF Corporation
No Drawing. Filed Dec. 18, 1967, Ser. No. 691,243
Int. Cl. C07d *39/00*
U.S. Cl. 260—272 2 Claims

An olive green vat dyestuff of relatively low infra-red reflectance having the formula:

(I)



wherein R^1 is alkyl or cycloalkyl of 1–6 carbon atoms, and R^2 is H or NHR^1.

3,575,982
PROCESS FOR PREPARING BUQUINOLATE
Nicholas D. Harris, Norwich, N.Y., assignor to The Norwich Pharmacal Company
No Drawing. Filed Oct. 28, 1968, Ser. No. 771,310
Int. Cl. C07d *33/48*
U.S. Cl. 260—287 1 Claim

A process for preparing buquinolate by cyclization of diethyl 3,4-diisobutoxyanilinomethylenemalonate with esters of phosphoric acid is described.

3,575,983
SUBSTITUTED 1,2,3,4-TETRAHYDROISOQUINOLINES
Willy Leimgruber, Montclair, and Fausto Eugenio Schenker, Bloomfield, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed Aug. 30, 1967, Ser. No. 664,268
Int. Cl. C07d *35/28*
U.S. Cl. 260—286 3 Claims

Novel pharmacologically active 1,2,3,4 - tetrahydro-8-isoquinolinol, 1-and/or 2-(lower alkyl)-1,2,3,4-tetrahydro-8-isoquinolinols and intermediates therefor, are prepared utilizing, for example, 8-isoquinolinol as a starting material. The pharmacologically active compounds of the invention are useful as hypotensive agents.

3,575,984
1-R-3,4-DIHYDRO-4-METHYL-4-PHENYL-6-CHLORO-CARBOSTYRILS
Janis Plostnieks, Philadelphia, Pa., assignor to McNeil Laboratories, Inc.
No Drawing. Filed Mar. 30, 1967, Ser. No. 626,982
Int. Cl. C07d *33/42, 33/58*
U.S. Cl. 260—289 4 Claims

The compounds herein are 3,4-dihydro-4-methyl-4-phenyl-6-chloro-carbostyril derivatives, useful for their various pharmacological activities, such as anti-inflammatory, hypotensive and central nervous system depressant activities. Also included herein is 4'-chloro-β-methyl-cinnamanilide, useful in the synthesis of the subject carbostyrils.

3,575,985
PYRIDINIUM COMPOUNDS
Alexander Crawford Ritchie, Eric Eastwood, and Peter Garside, London, England, assignors to Allen and Hanburys Limited, London, England
No Drawing. Filed June 26, 1967, Ser. No. 648,983
Claims priority, application Great Britain, June 28, 1966, 28,898/66
Int. Cl. C07d *31/22*
U.S. Cl. 260—290 11 Claims

Novel pyridinium salts are disclosed having an effect on the cardiovascular and nervous systems.

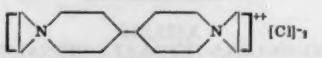
They are prepared by reaction of pyridine compounds with organic halides and related compounds. There is also disclosure of pharmaceutical compositions containing the pyridinium salts.

3,575,986
METHOD OF PRODUCING PYRIDINE
Joseph G. Crist, Mount Lebanon Township, Allegheny County, and John O. Hawthorne, Penn Hills Township, Allegheny County, Pa., assignors to United States Steel Corporation
No Drawing. Filed June 6, 1968, Ser. No. 734,882
Int. Cl. C07d *31/06*
U.S. Cl. 260—290 6 Claims

A method is disclosed for producing pyridine and related compounds in which formamide is used as the nitrogen-bearing starting material. Formamide is reacted with an unsaturated hydrocarbon (e.g. acetylene) in the presence of a catalyst (e.g. alumina spheres coated with zinc fluoride).

3,575,987
N,N'-BIS-(ETHYLENE)-4,4'-BIPIPERIDYL DICHLORIDE
Robert J. Rutman, Philadelphia, Pa., assignor to The Trustees of the University of Pennsylvania
No Drawing. Continuation-in-part of application Ser. No. 540,498, Apr. 6, 1966. This application July 2, 1969, Ser. No. 838,641
Int. Cl. C07d *29/28*
U.S. Cl. 260—293 1 Claim

The novel compound N,N'-bis-(ethylene)-4,4'-bipiperidyl dichloride is provided which is represented by the formula



The compound of this invention is especially useful for promoting the growth of vertebrate animals.

3,575,988
PIPERIDYL BIS(PARACHLOROPHENOXY) ACETATES
Rudolf G. Griot, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Continuation-in-part of application Ser. No. 598,970, Dec. 5, 1966, which is a continuation-in-part of application Ser. No. 568,759, July 29, 1966, which in turn is a continuation-in-part of application Ser. No. 549,475, May 12, 1966, now abandoned. This application Feb. 13, 1967, Ser. No. 615,316
The portion of the term of the patent subsequent to Dec. 8, 1987, has been disclaimed
Int. Cl. C07d *29/24*
U.S. Cl. 260—294.3 7 Claims

The compounds are of the class of basic esters of bis-(p-chlorophenoxy)acetic acid, e.g., bis-(p-chlorophenoxy) acetic acid 1-methyl-4-piperidyl ester, which are useful as hypocholesteremic/hypolipemic agents.

3,575,989
5-HYDROXY-4-(1-PIPERIDYL)-HYDROBENZ [c,d] INDOLES
Raj K. Razdan, Belmont, and Fatima N. Johnson, Arlington, Mass., assignors to Arthur D. Little, Inc.
No Drawing. Filed Apr. 23, 1968, Ser. No. 723,572
Int. Cl. C07d *29/28*
U.S. Cl. 260—294.7 3 Claims

5 - hydroxy - 4 - saturated heterocyclic amino-1,2,2a, 3,4,5-hexahydrobenz[cd]indoles are prepared by amination of 1 - benzyoyl - 4,5 - epoxy-1,2,2a,3,4,5-hexahydrobenz[cd]indole with an appropriate secondary amine followed by debenzoylation and in turn are converted, if desired, to the corresponding tetrahydro compounds by dehydrogenation. The compounds are useful as central nervous system depressants.

3,575,990
4-AR$_3$-1-(4-AR$_1$-4-AR$_2$-BUTYL)-4-HYDROXY-PIPERIDINES
Hubert Karel Frans Hermans, Beerse, and Carlos Jan Ernest Josef Niemegeers, Deurne, Belgium, assignors to Janssen Pharmaceutica N.V.
No Drawing. Filed Sept. 3, 1969, Ser. No. 855,016
Int. Cl. C07d *29/16*
U.S. Cl. 260—294.7 7 Claims

Compounds useful as neuroleptic agents defined as 4-aryl-1-(4,4-diaryl-butyl)-4-hydroxy-piperidines.

3,575,991

1-[4-ARYL - 5 - CARBOXYMETHYL-2-THIAZOLYL]-1,6-DIHYDRO - 6 - OXONICOTINIC ACIDS AND ESTERS THEREOF

Dong H. Kim, Wayne, Stanley C. Bell, Penn Valley, and Arthur A. Santilli, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Mar. 11, 1969, Ser. No. 806,294
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 6 Claims

This invention concerns 1-[4-aryl-5-carboxymethyl-2-thiazolyl]-1,6-dihydro-6-oxonicotinic acids and esters thereof which are pharmacologically active as central nervous system depressants. Further, it relates to the process of their preparation by the reaction of a 2-amino-4-aryl-5-thiazoleacetic acid ester with an alkyl coumalate.

3,575,992

VAPOR PHASE PRODUCTION OF DICHLOROCYANOPYRIDINES

William H. Taplin III, Lafayette, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 666,474, Sept. 8, 1967, now Patent No. 3,420,833, which is a continuation-in-part of application Ser. No. 321,283, Nov. 4, 1963. This application Jan. 6, 1969, Ser. No. 789,373
The portion of the term of the patent subsequent to May 17, 1983, has been disclaimed and dedicated to the Public
Int. Cl. C07d *31/46*
U.S. Cl. 260—294.9 8 Claims

Dichlorocyanopyridines are prepared by the reaction of chlorine and a monocyanopyridine or the monochloro derivatives thereof in a process which comprises introducing a monocyanopyridine, usually carried in a substantially inert diluent, both being in the vapor phase, into a reaction zone and contacting this mixture in a rapid turbulent mixing step with at least two moles of chlorine per mole monocyanopyridine. The reaction zone is maintained at a temperature in the range of from about 400° C. to about 550° C.

3,575,993

CERTAIN PHENACYL PYRIDINIUM COMPOUNDS

Donald W. Heseltine and Dugald A. Brooks, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Original application Aug. 16, 1965, Ser. No. 479,762, now Patent No. 3,455,693, dated July 15, 1969. Divided and this application Aug. 9, 1968, Ser. No. 774,552
Int. Cl. C07d *31/28*
U.S. Cl. 260—297 8 Claims

A bulky quaternary nitrogen heterocyclic alkali-release mordant that under alkaline conditions form a betaine that will not mordant anions, is advantageously used as a mordant for a water-soluble acid dye and hydrophilic colloid light-absorbing and light-filtering layers of photographic elements where it is desired to firmly hold the acid dye until photographic processing when during treatment in the alkaline processing solutions the acid dye is completely released and the betaine formed of the mordant is incapable of remordanting the acid dye or thio-sulfate ions from the fixing bath.

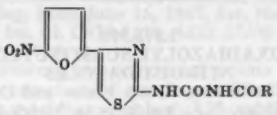
3,575,994

ACYL UREAS

Peter John Islip, Hampton, England, assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed Mar. 6, 1968, Ser. No. 710,749
Claims priority, application Great Britain, Mar. 23, 1967, 13,878/67
Int. Cl. C07d *99/10*
U.S. Cl. 260—306.8 6 Claims

N-acyl(nitrofurylthiazolyl)urea compounds



(I)

are prepared by reacting 2-amino-4-(5-nitro - 2 - furyl) thiazole with an acyl isocyanate R—CONCO, where R is lower alkyl or α- or β-haloalkyl. The compounds (I) are pharmacological agents having antiparasitic and antibacterial activity.

3,575,995

AMINO ISOXAZOLES

Harry Allen Albrecht, Towaco, and John Thomas Plati, Rutherford, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Apr. 6, 1965, Ser. No. 446,103, now Patent No. 3,544,582, dated Dec. 1, 1970. Divided and this application Feb. 24, 1970, Ser. No. 13,855
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 3 Claims

3-tert. alkylamino-4-(H or alkyl)-5-alkyl isoxazoles are prepared by (a) reacting the corresponding 4-(H or alkyl)-5-alkyl isoxazole with isobutylene or a compound of the formula

wherein R_3, R_4 and R_5 are lower alkyl and X is I, Cl, Br, OH, ClO_4, lower alkosulfate, or the anion of a mineral acid, and (b) reacting the product formed with hydroxylamine. The 3-tert. alkylamino-4-(H or alkyl-5-alkyl isoxazoles are useful intermediates for the preparation of known antibacterial sulfonamides.

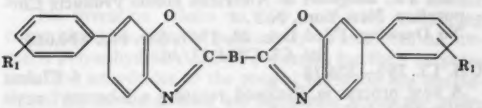
3,575,996

NEW BISAZOLES

Peter Liechti, Binningen, Leonardo Guglielmetti, Birsfelden, Erwin Maeder, Aesch, Basel-Land, and Adolf Emil Siegrist, Basel-Land, Switzerland, assignors to Ciba Limited, Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 482,275, Aug. 24, 1965. This application Mar. 1, 1966, Ser. No. 530,800
Claims priority, application Switzerland, Sept. 1, 1964, 11,402
Int. Cl. C07d *85/48*
U.S. Cl. 260—307 8 Claims

This invention concerns new optical brighteners of the formula



wherein R_1 is hydrogen or alkyl and B_1 stands for a direct carbon-to-carbon bond, or a possibly substituted phenylene or biphenylene group, as well as organic fiber materials optically brightened therewith.

3,575,997

NOVEL NEMATOCIDES AND HERBICIDES

Hermann Breuer, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed July 24, 1968, Ser. No. 747,103
Int. Cl. C07d *85/52*
U.S. Cl. 260—307 **1 Claim**

3-amino-5-n-undecyl-1,2,4-oxadiazole and salts thereof and methods for their use as nematocides and aquatic herbicides.

3,575,998

OXADIAZOLYL-SUBSTITUTED NITROIMIDAZOLES

Burton G. Christensen, Scotch Plains, and Dale R. Hoff, Basking Ridge, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Sept. 16, 1969, Ser. No. 858,538
Int. Cl. C07d *85/54*
U.S. Cl. 260—307 **5 Claims**

This invention relates to nitroimidazoles substituted by 1,3,4-oxadiazolinones. These novel compounds have antibacterial activity, especially against Streptomyces and Salmonella. The compounds also show anti-coccidial activity against various species of Eimeria.

3,575,999

KETAL DERIVATIVES OF IMIDAZOLE

Erik Fred Godefroi and Jan Heeres, Turnhout, Belgium, assignors to Janssen Pharmaceutica N.V.

No Drawing. Filed Aug. 19, 1968, Ser. No. 753,746
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **4 Claims**

The compounds are of the class of 1-(β-aryl)ethylimidazole ketals useful for their anti-fungal and antibacterial activities.

3,576,000

AMINOETHER DERIVATIVES OF 9,10-DIHYDRO-9,10-ETHANO-9-ANTHROLS AND THEIR SALTS

Jacques Robert Boissier, Paris, and Roger Ratouis, Saint Cloud, France, assignors to Societe Industrielle pour la Fabrication des Antibiotiques (S.I.F.A.), Puteaux, France

No Drawing. Filed July 3, 1967, Ser. No. 650,636
Claims priority, application France, July 6, 1966, 68,353; Sept. 23, 1966, 77,375
The portion of the term of the patent subsequent to Jan. 14, 1986, has been disclaimed
Int. Cl. C07c *93/06*
U.S. Cl. 260—326.5 **6 Claims**

Aminoether derivatives of 9,10-dihydro-9,10-ethano-9-anthrols and their acid addition and quaternary ammonium salts. These compounds are useful in therapeutics because of their antihistaminic and local anesthetic properties.

3,576,001

2-AMINO-3-ARYL-3H-INDOL-3-OLS AND THEIR METHOD OF PREPARATION

Stanley C. Bell, Narberth, and Carl Gochman, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 28, 1967, Ser. No. 694,066
Int. Cl. C07d *27/36*
U.S. Cl. 260—326.12 **6 Claims**

A new process is disclosed reacting a 2-benzoyl acylanilide with ionic cyanides to form new 3-aryl-2-imino-3-indolinols and 2-amino-3-aryl-3H-indol-3-ols. The products may be further processed into a number of new derivatives which have therapeutic activity in experimental and comparative pharmacology.

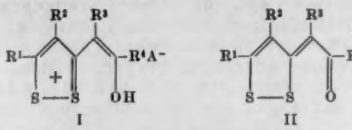
3,576,002

DITHIOLE COMPOUNDS AND PREPARATION

Erwin Klingsberg, Mountainside, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Mar. 12, 1968, Ser. No. 712,382
Int. Cl. C07d *71/00;* **C09b** *49/00*
U.S. Cl. 260—327 **9 Claims**

3-chloro-1,2-dithiolium salts condense with phenolic compounds to form dyes of Formulas I (salt) or II (free base):



I II

where typically R^1 and R^2 together form a benzo or naphtho nucleus; R^3 and R^4 together form a substituted or unsubstituted phenyl, naphtho or phenanthro nucleus, the substituents being alkyl, halo, carboxyl or di(lower) alkylamino; and A^- is an anion. The products are useful dyes.

3,576,003

ARYL HETERO ACRYLAMIDES

Albert F. Strobel, Delmar, and Sigmund C. Catino, Castleton, N.Y., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 248,305, Dec. 31, 1962, and Ser. No. 573,795, Aug. 22, 1966. This application Nov. 15, 1967, Ser. No. 683,136
Int. Cl. C07d *5/16, 63/12;* **C11d** *7/00*
U.S. Cl. 260—332.2 **19 Claims**

Substantially colorless compounds which exhibit a prominent absorption peak between 250 A. and 400 A. and which are stabilizers for organic materials against the degradative effect of such radiation are characterized as aryl, hetero acrylamides, the said hetero moiety being of the group containing 5 and 6 members in the ring and wherein the hetero atom is at least one of the group of oxygen, nitrogen, and sulfur.

3,576,004

NOVEL RING-E SUBSTITUTED 4-CYANO-3-SECOYOHIMBANES

Jay Donald Albright and Leon Goldman, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Sept. 9, 1968, Ser. No. 758,593
Int. Cl. C07d *27/54*
U.S. Cl. 260—326.3 **7 Claims**

This disclosure describes compounds of the class of ring-E substituted 4-cyano-3-secoyohimbanes and 4-cyano-3-secoalloyohimbanes useful as analgesics, anti-inflammatory agents, and central nervous system depressants.

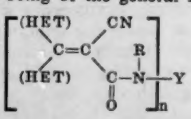
3,576,005

BIS HETERO CYANOACRYLAMIDES

Albert F. Strobel, Delmar, and Sigmund C. Catino, Castleton, N.Y., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 601,346, Dec. 13, 1966, which is a continuation-in-part of application Ser. No. 242,889, Dec. 7, 1962. This application Feb. 28, 1969, Ser. No. 803,422
Int. Cl. C09b *23/00*
U.S. Cl. 260—332.2 **18 Claims**

Essentially colorless compounds useful as absorbents for ultraviolet light and stabilizers for organic materials, such compounds being of the general formula:



wherein:

(a) (HET) is a monocyclic heterocyclic nucleus or corresponding benzo monocyclic heterocyclic nucleus;

(b) n is an integer of 1 or 2;

(c) R is hydrogen, alkyl, aryl or the atoms necessary to form a heterocyclic ring with N and Y when $n=1$;

(d) when $n=1$ Y is hydrogen, alkyl, aryl or the atoms necessary to form a heterocyclic ring with N and R; and

(e) when $n=2$, Y is a bivalent bridging radical.

3,576,006

PREPARATION OF SUBSTITUTED PERHYDRO-INDENES AND PERHYDRONAPTHALENES

Gabriel Saucy, Essex Fells, N.J., asignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Division of application Ser. No. 679,989, Nov. 2, 1967, which is a continuation-in-part of application Ser. No. 633,730, Apr. 26, 1967, which is a continuation-in-part of application Ser. No. 604,124, Dec. 23, 1966, which in turn is a continuation-in-part of application Ser. No. 549,816, May 13, 1966. This application June 6, 1968, Ser. No. 734,893

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 9 Claims

3-substituted-6$\alpha\beta$-alkyl-4a-hydroxy, alkoxy, and acyloxy perhydrocyclopenta[f][1]benzopyrans or perhydronaphtho[2,1-b]pyrans are converted into 4-(3-oxo-alkyl)perhydroindene-5-ones or the corresponding perhydronaphalene-6-ones. These latter compounds can be converted to known steroidal materials which are pharmacologically active as progestational agents.

3,576,007

WATER SOLUBLE SALTS OF ELLAGIC ACID

Francis A. Hochstein, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Jan. 16, 1967, Ser. No. 609,346

Int. Cl. A61k *27/00*; C07d *7/24*

U.S. Cl. 260—343.2 2 Claims

The soluble dicholine and bis-triethylamine salts of ellagic acid are prepared, aqueous solutions of which are useful as intravenously injectable hemostatic agents.

3,576,008

SYNTHESIS OF 2 - HYDROXY-2,6,6-TRIMETHYL-CYCLOHEXYLIDENE ACETIC ACID, γ-LACTONE

Joseph N. Schumacher, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

No Drawing. Filed Jan. 29, 1968, Ser. No. 701,104

Int. Cl. C07d *5/06*

U.S. Cl. 260—343.3 5 Claims

Synthesis of 2 - hydroxy - 2,6,6 - trimethylcyclohexylidene acetic acid, γ-lactone wherein β-ionone is irradiated with ultraviolet light and the resulting irradiated product is oxidized to 2-hydroxy-2,6,6-trimethylcyclohexylidene acetic acid, γ-lactone.

3,576,009

AMPHETAMINE DERIVATIVES

Ernest Magnien, Flushing, and Bill Elpern, White Plains, N.Y., assignors to USV Pharmaceutical Corporation

No Drawing. Filed Apr. 2, 1968, Ser. No. 718,220

Int. Cl. C07d *5/06*

U.S. Cl. 260—343.6 5 Claims

Derivatives of amphetamine obtained by the reaction of amphetamine with 2-acyllactone or a β-keto-ester or the compound obtained upon hydrogenation of the lactone reaction product are potent appetite depressants but do not show the CNS activity of amphetamine.

3,576,010

SUBSTITUTED ANILINO HALOGENATED FURANONES

Gerald L. Bachman, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 16, 1967, Ser. No. 646,444

Int. Cl. C07d *5/06*; A61k *27/00*

U.S. Cl. 260—343.6 9 Claims

This disclosure covers substituted anilino halogenated furanones as new chemical compounds. These compounds have been found to be useful in the control of bacteria.

3,576,011

TETRAHYDROPYRAN PRODUCTION

Peter Haynes, 433 Michigan Ave., Berkeley, Calif. 94707

No Drawing. Filed Oct. 28, 1968, Ser. No. 771,368

Int. Cl. C07d *7/04*

U.S. Cl. 260—345.1 10 Claims

Dialkenyl-substituted tetrahydropyran compounds, useful in perfume compositions and as solvents, are produced by contacting conjugated diolefinic compounds and formaldehyde in the presence of an organophosphine-containing palladium(O) complex.

3,576,012

NICKEL SALTS OF IMINOHETEROCYCLICAMIDES

Albert S. Matlack, Hockessin, Del., assignor to Hercules Incorporated

No Drawing. Filed Nov. 2, 1967, Ser. No. 680,037

Int. Cl. C07d *7/20*

U.S. Cl. 260—345.2 3 Claims

Highly colored nickel salts or chelates of iminoheterocyclic carboxamides or carbothiamides suitable as pigments are described. The nickel salts are prepared by reacting a nickel halide or a nickel salt of a weak acid with the desired iminoheterocyclic carboxamide or carbothiamide, as for example, with 2-iminocoumarin-3-carboxamide, which in turn can be preformed or formed in situ by condensing the appropriate aldehyde with a cyanoacetamide or cyanothioacetamide. Pigmentary mixed chelates are also formed in the same manner by reacting the nickel salt with a mixture of the desired iminoheterocyclic carboxamide or carbothiamide and at least one other chelating agent such as, for example, dimethylglyoxime, 1-nitroso-2-naphthol, etc.

3,576,013

POLYANHYDRIDES

William Cummings, Marford, Wales, assignor to Monsanto Chemicals Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 331,368, Dec. 18, 1963. This application Mar. 1, 1968, Ser. No. 709,805

Claims priority, application Great Britain, Dec. 28, 1962, 48,750/62; Mar. 16, 1967, 12,466/67

Int. Cl. C07c *63/48*

U.S. Cl. 260—346.3 6 Claims

This invention relates to new anhydride containing compositions and more particularly to mixtures of aromatic polyanhydrides and to processes for their preparation. The anhydrides of the present invention are characterized by having at least one anhydride group per molecule located on an aromatic nucleus, which aromatic nucleus is directly linked to at least one other aromatic nucleus by a direct nuclear carbon to nuclear carbon bond. These materials are of particular value as starting materials in the production of condensation polymers.

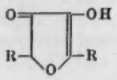
3,576,014

ALKYL SUBSTITUTED DIHYDROFURANS AND METHOD OF MANUFACTURE

Luciano Re, Meyrin, Geneva, and Gunther Ohloff, Bernex, Geneva, Switzerland, assignors to Firmenich & Cie, Geneva, Switzerland

No Drawing. Filed June 12, 1968, Ser. No. 736,269
Claims priority, application Switzerland, June 16, 1967, 8,620/67; June 5, 1968, 8,254/68
Int. Cl. C07d 5/10; A23l 1/00
U.S. Cl. 260—347.8 8 Claims

The present invention relates to a novel process for preparing dihydrofuran derivatives of formula



I

wherein one of the symbols R means a methyl radical and the other one an ethyl radical or wherein both symbols R represent methyl radicals. The compounds of Formula I possess valuable organoleptic properties and are, therefore, useful as flavouring agents and as fragrances. The invention also relates to those compounds of Formula I wherein one of the R's is ethyl and which are new substances. The invention furthermore relates to new intermediates used in the said new process and to methods for preparing them.

3,576,015

ANTHRAQUINONE DYESTUFFS

Guido R. Genta, Dunnstown, Pa., assignor to American Aniline Products, Inc.

No Drawing. Filed May 8, 1969, Ser. No. 823,183
Int. Cl. C09b 1/56
U.S. Cl. 260—371 4 Claims

New anthraquinone dyes, 1,4-diamino-2- (or -3-)thiophenoxy-3 (or -2)chloro - 5 - phenylsulfonamidoanthraquinones, are made from 1,4-diamino-2,3-dichloro-anthraquinone by a sequence of reactions involving bromination in anhydrous aluminum chloride and Ullmann reaction followed by replacement of a chlorine atom with a thiophenoxy group. The new dyes have excellent substantivity, lightfastness and sublimation properties on aromatic polyester fibers.

3,576,016

PREPARATION OF BENZOQUINONES

Herman L. Finkbeiner, Ballston Lake, N.Y., assignor to General Electric Company

No Drawing. Filed Apr. 1, 1968, Ser. No. 717,932
Int. Cl. C07c 49/02
U.S. Cl. 260—396 12 Claims

Poly(2,6-disubstituted-1,4-phenylene oxides) are reacted with an oxidizing agent in the presence of a carboxylic acid to produce the corresponding 2,6-disubstituted p-benzoquinones. These products are very reactive compounds and may be used as chemical intermediates, as oxidizing agents or they may be reduced to the corresponding hydroquinones which are useful for making polyesters, polycarbonates, polyurethanes, etc.

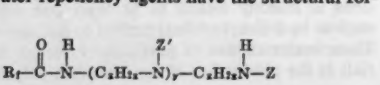
3,576,017

HALOALKANOYL DERIVATIVES OF FLUORINATED AMIDES

Richard F. Sweeney, Randolph Township, Morris County, and Alson K. Price, Morris Township, Morris County, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Aug. 1, 1968, Ser. No. 749,321
Int. Cl. C09f 7/00
U.S. Cl. 260—404.5 16 Claims

Haloalkanoyl derivatives of fluorinated amides useful as oil- and water-repellency agents have the structural formula



wherein x and y are integers from 2 to 6 and 1 to 4, respectively; wherein R_f is a perfluoroalkyl or a fluorinated isoalkoxyalkyl radical; Z is H, alkyl, hydroxyalkyl, a fluorinated acyl radical R_fCO— wherein R_f is as described above, or a haloalkanoyl radical; and Z' is H, alkyl, hydroxyalkyl, a fluorinated acyl radical R_fCO— wherein R_f is as described above, a haloalkanoyl radical or a radical having the formula $—C_xH_{2x}NHZ$ wherein Z is as described above, there being at least one fluorinated acyl radical R_fCO— and at least one haloalkanoyl radical in the molecule represented by Z and/or Z'.

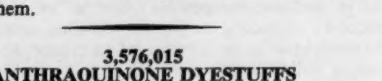
3,576,018

ACRYLYL DERIVATIVES OF FLUORINATED AMIDES

Richard F. Sweeney, Randolph Township, Morris County, and Alson K. Price, Morris Township, Morris County, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Aug. 1, 1968, Ser. No. 749,310
Int. Cl. C09f 7/00
U.S. Cl. 260—404.5 13 Claims

Acrylyl derivatives of fluorinated amides useful as oil- and water-repellency agents have the structural formula



wherein x and y are integers from 2 to 6 and 1 to 4, respectively; wherein R_f is a perfluoroalkyl or a fluorinated isoalkoxyalkyl radical; Z is H, alkyl, hydroxyalkyl, a fluorinated acyl radical R_fCO— wherein R_f is as described above, or an acrylyl radical; Z' is H, alkyl, hydroxyalkyl, a fluorinated acyl radical R_fCO— wherein R_f is as described above, an acrylyl radical or a radical having the formula $—C_xH_{2x}NHZ$ wherein Z is as described above, there being at least one fluorinated acyl radical R_fCO— and at least one acrylyl radical in the molecule represented by Z and/or Z'.

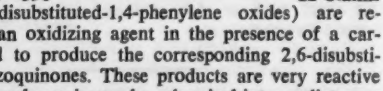
3,576,019

FLUOROCARBON OIL-REPELLENCY AGENTS

Richard F. Sweeney, Randolph Township, Morris County, and Alson K. Price, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Aug. 1, 1968, Ser. No. 749,351
Int. Cl. C09f 7/00
U.S. Cl. 260—404.5 9 Claims

Fluorinated amide oil-repellency agents for fibrous materials as textiles and paper have the structural formula



wherein R_f is a fluorine-containing alkyl radical having a terminal fluoroisoalkoxyfluoroalkyl group; x and y are integers from 2 to 6 and 1 to 4, respectively; Z is H, alkyl, hydroxyalkyl or an acyl radical of the formula $—COR_f$ wherein R_f is as described above; and Z' is H, alkyl, hydroxyalkyl, the above-described acyl radical or a radical of the formula $—C_xH_{2x}NHZ$ wherein Z is as described above.

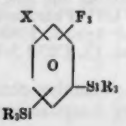
3,576,020

FLUOROAROMATIC SILICONE COMPOUNDS

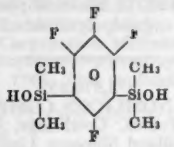
Lorne A. Loree and Eric D. Brown, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Feb. 20, 1969, Ser. No. 801,202
Int. Cl. C07f 7/08, 7/18
U.S. Cl. 260—448.20 11 Claims

Compounds of the general formula



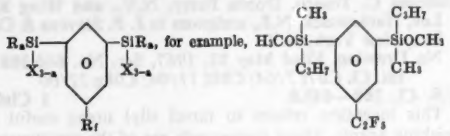
for example



are hydrolyzed and condensed to produce polymers from which elastomers can be formulated.

3,576,021
BIS-SILYLFLUOROALKYLAROMATIC COMPOUNDS
George A. Grindahl, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Feb. 20, 1969, Ser. No. 801,203
Int. Cl. C07f *7/08, 7/18*
U.S. Cl. 260—448.2 **6 Claims**

Bis-silyl compounds of the general formula



are hydrolyzed and condensed to produce polymers from which heat-stable polymers can be formulated.

3,576,022
ORGANOSILICON COMPOUNDS
Richard P. Bush, Penarth, Glamorgan, and Christopher A. Pearce, Cowbridge, Glamorgan, Wales, assignors to Midland Silicones Limited, Reading, England
No Drawing. Filed Oct. 3, 1968, Ser. No. 764,926
Claims priority, application Great Britain, Oct. 5, 1967, 45,560/67
Int. Cl. C07f *7/02*
U.S. Cl. 260—448.2 **5 Claims**

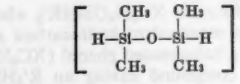
Silazane endblock siloxanes of the formula

$$[(R_3Si)_2NSiR'_2OSiR''_2]_2O$$

where R, R' and R'' are defined organic radicals and R can also be hydrogen.

3,576,023
METHOD FOR PREPARATION OF Si—H FUNCTIONAL ORGANODISILOXANES
James William Curry, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
No Drawing. Filed July 31, 1968, Ser. No. 748,932
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 **5 Claims**

Reacting a tertiary alcohol such as tert-butyl alcohol [$(CH_3)_3COH$] with a diorganohalosilane such as dimethylchlorosilane [$(CH_3)_2SiHCl$] to produce Si—H functional organodisiloxanes such as sym-tetramethyldisiloxane



having Si—H bonds.

3,576,024
PREPARATION OF VINYLALKOXYSILANES
William H. Atwell, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Aug. 11, 1969, Ser. No. 849,166
Int. Cl. C07f *7/04, 7/18*
U.S. Cl. 260—448.8 **8 Claims**

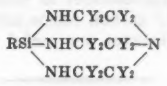
The preparation of vinylalkoxysilanes which involves contacting (in a closed system or open continuous system) an alkoxy-substituted disilane with at least a stoichiometric amount of an alcohol, e.g., methanol, and an alkyne, e.g., acetylene, at a temperature of at least 175° C. The recovered vinylalkoxysilanes are particularly useful as crosslinkers and/or chain extenders for a variety of elastomers.

3,576,025
ALPHA-HYDROXYCARBOXYLIC ACID PENTACOORDINATE SILICON COMPLEXES
Cecil L. Frye, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Aug. 19, 1969, Ser. No. 851,435
Int. Cl. C07d *103/04;* **C07f** *7/04*
U.S. Cl. 260—448.8 **8 Claims**

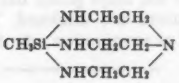
Alpha-hydroxycarboxylic acid pentacoordinate siilcon complexes useful as catalysts or cross-linking agents for epoxy resins are disclosed.

3,576,026
TRIPTYCH-SILAZAZOLIDINES
Gary E. Le Grow, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Oct. 3, 1969, Ser. No. 863,685
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2 **6 Claims**

Compounds of the formula



are prepared by reacting a trisdialkylaminosilane with a tris(beta-aminoethyl)amine. The products are useful as curing catalysts for epoxy resins. Specific example is the reaction of methyl trisdimethylaminosilane with tris(beta-aminoethyl)amine at 100° to give the compound

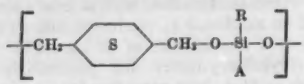


3,576,027
HYDROSILATION OF OLEFINS
John Gaylord Fish, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
No Drawing. Filed July 31, 1968, Ser. No. 748,942
Int. Cl. C07f *7/08, 7/18*
U.S. Cl. 260—448.2 **4 Claims**

Platinum-silane catalyst compositions suitable for hydrosilation of olefins are prepared by reacting crystalline chloroplatinic acid with an organic silane or siloxane to form a stable but highly reactive platinum-silane composition. The contact of olefins with this composition results in rapid addition of the organic silane or siloxane thereto.

3,576,028
POLYALKOXYSILANES
John G. Fish, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
No Drawing. Filed July 31, 1968, Ser. No. 748,941
Int. Cl. C08f 11/04; C08g 31/02; C07f 7/04
U.S. Cl. 260—448.8 7 Claims

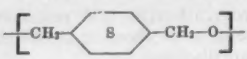
Polyalkoxysilanes having repeating structural units which may be represented by the formula:



(1)

where R and A are each selected from the group consisting of hydrogen, monovalent hydrocarbon radicals and oxy, carboxy, alkoxy and halogen substituted derivatives thereof.

A straight chain polyalkoxysilane will be represented by the Formula 1 where R and A are methyl radicals, for example, and a cross-linked polysiloxane will be represented by the formula when R represents the methyl group, and A represents the following monovalent, alkoxy substituted hydrocarbon radical, for example,



(2)

when the —O— atom is bound to the silicon atom in Formula 1 above and the methylene group is linked to another structural unit such as represented in Formula 1.

3,576,029
ALKYLTETRAMETHYLDISILOXANE
Loren A. Haluska, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Aug. 15, 1968, Ser. No. 752,749
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 2 Claims

Alkyltetramethyldisiloxanes in which the alkyl group has from 12 to 45 carbon atoms are disclosed. The alkyltetramethyldisiloxanes are useful as evaporation accelerators.

3,576,030
ALKYLDIPHENYLSILANES
Richard W. Alsgaard, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Aug. 15, 1968, Ser. No. 752,777
Int. Cl. C07f 7/08, 7/18
U.S. Cl. 260—448.2 5 Claims

Alkyldiphenylacetoxysilanes and alkyldiphenylmethoxysilanes in which the alkyl group has from 12 to 45 inclusive carbon atoms are disclosed. The alkyldiphenylsilanes are useful as evaporation retardants.

3,576,031
AMIDE ACID AND IMIDO-SUBSTITUTED ORGANOSILANES
Fred F. Holub and Milton L. Evans, Schenectady, N.Y., assignors to General Electric Company
No Drawing. Filed May 5, 1969, Ser. No. 821,969
Int. Cl. C07f 7/10
U.S. Cl. 260—448.2 2 Claims

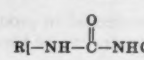
Organosilanes are provided having at least one chemically-combined aliphatically unsaturated imido organic radical, such as a maleimido-substituted organosilane and a method for making these materials. For example, reaction can be effected between an aliphatically unsaturated dicarboxylic acid anhydride and an aminoorganoalkoxysilane. In certain instances, amido acid precursors of such unsaturated imido-substituted organosilanes also can be made. The aliphatically unsaturated imido-substituted organosilanes of the present invention can be employed to impart improved surface characteristics to cellulosic substrates and to make aliphatically unsaturated imido-substituted organopolysiloxanes.

3,576,032
ORGANOSILICON COMPOUNDS
Christopher A. Pearce, Cowbridge, Glamorgan, Wales, assignor to Midland Silicones Limited, Reading, England
No Drawing. Filed May 21, 1969, Ser. No. 826,732
Claims priority, application Great Britain, May 29, 1968, 25,832/68
Int. Cl. C07f 7/06, 7/18
U.S. Cl. 260—448.2 8 Claims

Compounds of the general formula $HR_2SiC_6H_4OM$ where R is a monovalent hydrocarbon radical and M is H or $—SiR'_2H$ where R' is a monovalent hydrocarbon radical as exemplified by $H(CH_3)_2SiC_6H_4OH$ and $H(CH_3)_2SiC_6H_4OSiH(CH_3)_2$ and useful in polymerization reactions.

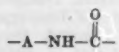
3,576,033
1-METHYL-PHENYLENE-2,4-BIS(TRIETHOXY-SILYL PROPYLENE-3'-UREYLENE)
Giuliana C. Tesoro, Dobbs Ferry, N.Y., and Wing Kai Lee, Hackensack, N.J., assignors to J. P. Stevens & Co., Inc., New York, N.Y.
No Drawing. Filed May 22, 1967, Ser. No. 640,388
Int. Cl. C07f 7/04; C08f 11/04; C08g 22/00
U.S. Cl. 260—448.8 1 Claim

This invention relates to novel silyl ureas useful as finishing agents. These compounds are of the structure:



wherein R is a divalent organic radical selected from the group consisting of:

(a) chains of linear polymers terminated on both ends by arylenecarbamoyl radicals of the structure



wherein A is arylene, and

(b) hydrocarbon radicals,

wherein Q is a silylalkyl radical having affixed to the silicon atom three substituents selected from the group consisting of alkyl, alkoxy, and aryloxy at least one substituent of which is selected from the group consisting of alkoxy and aryloxy, with the proviso that said alkyl moiety of the silylalkyl can be interrupted by ether oxygen (—O—), and imino groups

wherein R' is selected from the group consisting of hydrogen, aryl and alkyl.

3,576,034
ORGANOSILICON COMPOUNDS
Christopher A. Pearce, Cowbridge, Glamorgan, Wales, assignor to Midland Silicones Limited, Reading, England
No Drawing. Filed May 21, 1969, Ser. No. 826,731
Claims priority, application Great Britain, May 29, 1968, 25,833/68
Int. Cl. C07f 7/06, 7/18
U.S. Cl. 260—448.8 4 Claims

Silanes of the formula $XC_6H_4OSiHR'_2$ where X is Cl or Br and R' is a monovalent hydrocarbon radical prepared by reacting a halogenated phenol (XC_6H_4OH) with an organosilicon compound having an $R'_2HSi—$ group present. The products are useful in preparing polymeric materials.

3,576,035

ALCOHOLYSIS OF THE SILICON-SILICON BOND

William H. Atwell, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 797,695, Feb. 7, 1969. This application June 2, 1969, Ser. No. 829,703

Int. Cl. C07f 7/04, 7/18

U.S. Cl. 260—448.8 **10 Claims**

The alcoholysis of polysilanes which involves employing palladium-on-charcoal as the catalyst. For example, one can mix a disilane of the formula

$$(CH_3)_3Si—Si(CH_3)_3$$

with an alcohol, e.g., CH_3OH, in the presence of palladium-on-charcoal at room temperature. Hydrogen is evolved and an alkoxysilane of the formula

$$(CH_3)_3SiOCH_3$$

is obtained. Heretofore, there was no available transition-metal catalyst for catalyzing alcoholysis of hexamethyldisilane.

ERRATUM

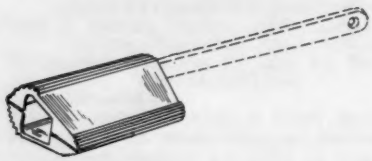
For Class 264—94 see:
Patent No. 3,575,949

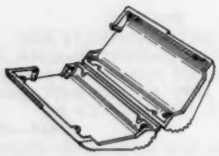
DESIGNS

APRIL 20, 1971

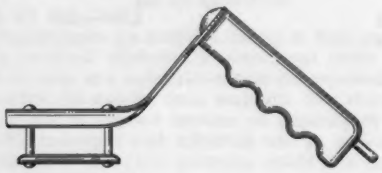
220,464
SPORT SHOE
Hideo Hayashi, Kakogawa, Japan, assignor to Onitsuka Co., Ltd., Kobe, Japan
Filed Apr. 9, 1970, Ser. No. 22,341
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

220,465
TOOTHBRUSH COVER
Seymour F. Fohrman, 8242 McCormick Blvd., Skokie, Ill. 60076
Filed Aug. 25, 1969, Ser. No. 18,847
Term of patent 3½ years
Int. Cl. D4—*02*
U.S. Cl. D4—18

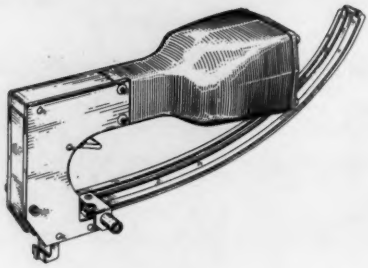




220,466
HANDLE GRIP FOR A SNOW SHOVEL OR SIMILAR ARTICLE
Walter R. Hart, Columbus, Ohio, assignor to The Union Fork and Hoe Company, Columbus, Ohio
Filed Feb. 24, 1970, Ser. No. 21,581
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—1



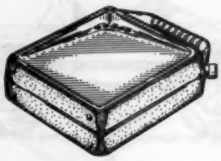
220,467
PORTABLE POWER ACTUATED CLIP-APPLYING TOOL
Harrison C. Lingle, Wilmette, and Arthur Langas, Glenview, Ill., assignors to Hartco Company, Wilmette, Ill.
Filed Sept. 4, 1969, Ser. No. 19,010
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—49



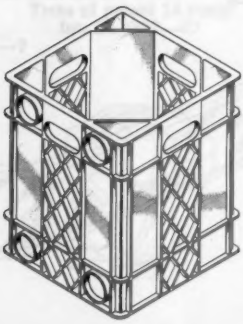
220,468
BOTTLE
Jerome Gould, Los Angeles, Calif., assignor to Gem Incorporated, Byhalia, Miss.
Filed Apr. 17, 1970, Ser. No. 22,485
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—47

220,469
BOTTLE
Tapio Wirkkala, Helsinki, Finland, assignor to Oy Alko Ab, Helsinki, Finland
Filed Oct. 2, 1969, Ser. No. 19,375
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—80

220,470
COMBINED DRIP PAN AND CONTAINER FOR LIQUIDS
Andrew R. Lewis, 9166 E. 4th, Tulsa, Okla. 74112
Filed Mar. 19, 1970, Ser. No. 21,980
Term of patent 3½ years
Int. Cl. D9—*07*
U.S. Cl. D9—175

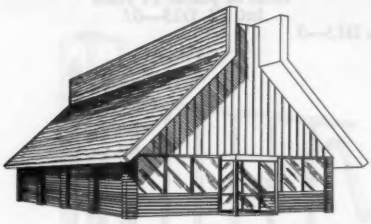


220,471
WATER BOTTLE CASE
Carl E. Frahm and Shirley E. Frahm, both of 1428 Oak Meadow Road, Arcadia, Calif. 91006
Filed Apr. 30, 1970, Ser. No. 22,737
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—177



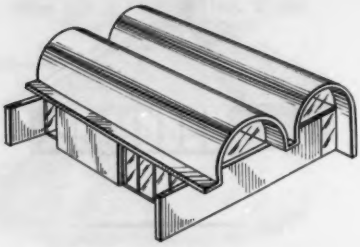
220,472
BUILDING
Cesar Pelli, Los Angeles, Calif., assignor to American Snacks, Inc., Chelsea, Mass.
Filed Sept. 17, 1969, Ser. No. 19,179
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1

220,473
BUILDING
Cesar Pelli, Los Angeles, Calif., assignor to American Snacks, Inc., Chelsea, Mass.
Filed Sept. 17, 1969, Ser. No. 19,197
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1

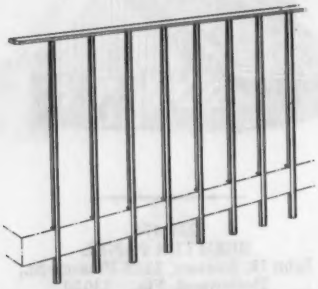


220,474
SHUTTER PANEL
John H. Sassano, 2215 Filmore St., Hollywood, Fla. 33020
Filed Feb. 13, 1970, Ser. No. 21,438
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1

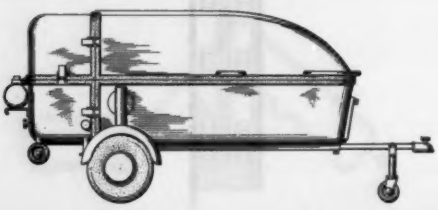
220,475
BUILDING
Elliott H. Brenner, Lafayette, Ind., assignor to Araneida, Inc., West Lafayette, Ind.
Filed June 22, 1970, Ser. No. 23,602
Term of patent 14 years
Int. Cl. D25—*04*
U.S. Cl. D13—1



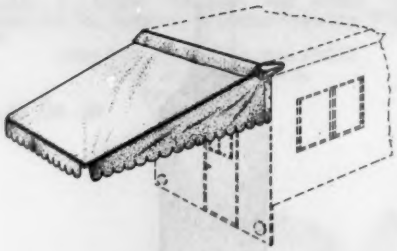
220,476
HANDRAILING
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Filed July 2, 1969, Ser. No. 18,032
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—7



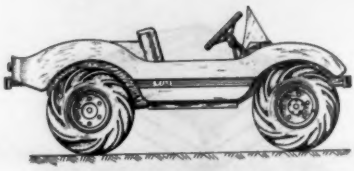
220,477
COMBINED BOAT, TRAILER, CAMPER AND COOKING UNIT
Morton W. Johnson, 4663 Capay Court 2, San Jose, Calif. 95118
Filed Apr. 9, 1970, Ser. No. 22,345
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



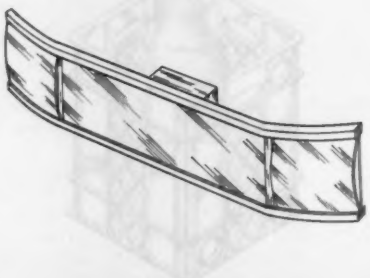
220,478
TRAILER AWNING UNIT
Charles D. Shelton, 8601 Cherry Lane, Westminster, Colo. 80030
Filed Sept. 12, 1968, Ser. No. 13,514
Term of patent 14 years
Int. Cl. D12—*14*; D21—*05*
U.S. Cl. D14—3



220,479
MOTOR VEHICLE
Edgar Blanchette, Drummondville South, Quebec, Canada, assignor to Terrajet Inc., Drummondville South, Quebec, Canada
Filed June 1, 1970, Ser. No. 23,229
Term of patent 3½ years
Int. Cl. D12—*08*
U.S. Cl. D14—3

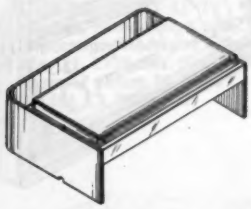


220,480
AUTOMOBILE THREE WAY REAR AND SIDE VIEW MIRROR
Raymond B. Kesler, % Irving Seidman, 655 Madison Ave., New York, N.Y. 10021
Filed July 7, 1969, Ser. No. 18,094
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—6

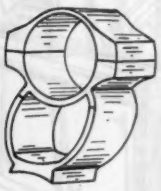


220,481
CHAIR
Eero Aarnio, Helsinki, Finland, assignor to Asko Osakeyhtio, Lahti, Finland
Filed May 6, 1968, Ser. No. 11,786
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—1

220,482
KNEELER
Kurt E. Landberg, St. Louis, Mo., assignor to Burks & Landberg, Architects, St. Louis, Mo.
Filed Sept. 11, 1969, Ser. No. 19,109
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—8

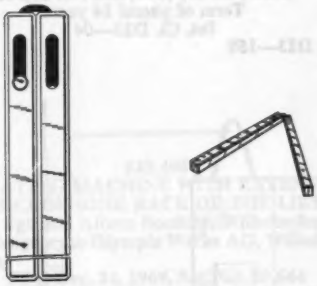


220,483
MOUNTING FOR A RIFLE TELESCOPIC SIGHT
Irving Rubin, 21781 Stratford, Oak Park, Mich. 48237, and Ivan Jimenez, 1780 Outerlane Drive, Ypsilanti, Mich. 48197
Filed Feb. 26, 1970, Ser. No. 21,641
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—7

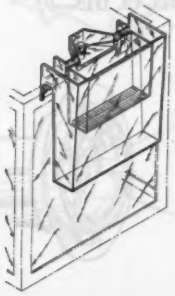


220,484
FISHING ROD HOLDER
Reaves F. Morris, 204 Bryd St., Oklahoma City, Okla. 73110
Filed May 28, 1970, Ser. No. 23,187
Term of patent 14 years
Int. Cl. D22—*08*
U.S. Cl. D22—22

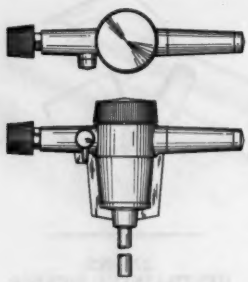
220,485
RESTRAINING DEVICE
Russell D. Hanke and Lawrence E. McDonald, Southgate, Mich., assignors to Penguin Industries, Inc., Parksburg, Pa.
Filed Feb. 28, 1969, Ser. No. 15,968
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—99



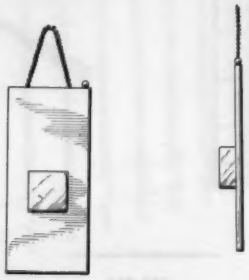
220,486
FILTER FOR HOME AQUARIUMS
Walter Sesholtz, Park Ridge, N.J., assignor to Sternco Industries, Inc., Harrison, N.J.
Filed Apr. 10, 1970, Ser. No. 22,366
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



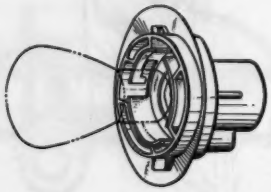
220,487
ROOT FEEDER
Don Wayne Doman, Janesville, Wis., assignor to Ross Daniels, Incorporated, West Des Moines, Iowa
Filed Oct. 29, 1969, Ser. No. 19,831
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—10



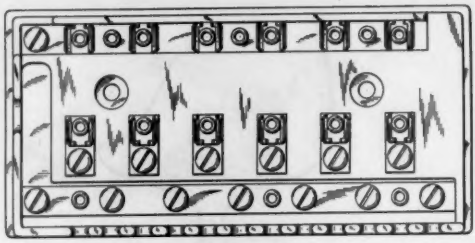
220,488
PERFUME EVAPORATOR FOR AUTOMOBILES
Leon Patrigot, 13 Rue Richan, Lyon 4, France
Filed Jan. 19, 1970, Ser. No. 20,985
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



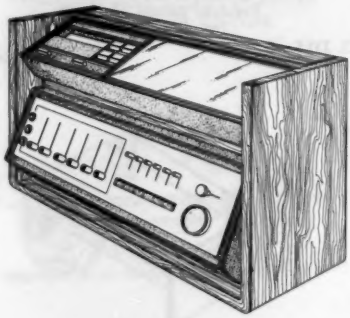
220,489
VEHICLE LAMP SOCKET
Takeshige Fujita and Tetsuo Tsuruta, Tokyo, Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Dec. 11, 1969, Ser. No. 20,450
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



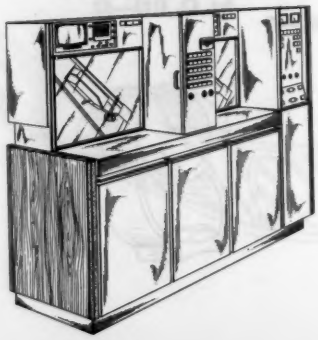
220,490
MARINE TERMINAL BLOCK
Lowell Abeles, 77 Zaccheus Mead Lane, Greenwich, Conn. 06830
Filed Jan. 8, 1970, Ser. No. 20,832
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



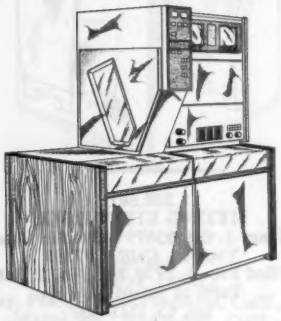
220,491
MAGNETIC TAPE CASSETTE TRANSPORT
Hari Matsuda, Evanston, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed May 7, 1970, Ser. No. 22,877
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



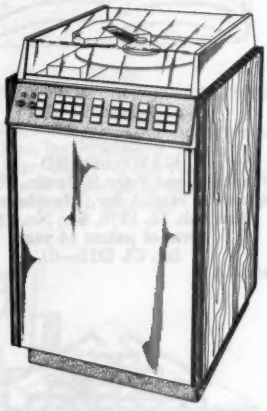
220,492
CASSETTE FEEDING APPARATUS
Darrell S. Staley, Santa Clara, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Apr. 1, 1970, Ser. No. 22,148
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



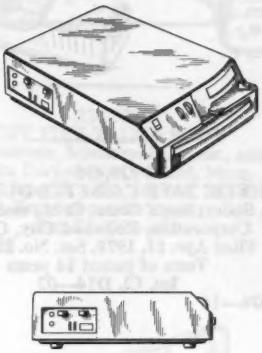
220,493
CASSETTE FEEDING APPARATUS
Darrell S. Staley, Santa Clara, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Apr. 1, 1970, Ser. No. 22,147
Term of patent 14 years
Int. Cl. D14—*02, 03*
U.S. Cl. D26—5



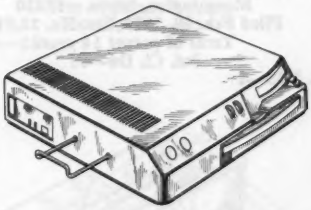
220,494
DISC MEMORY UNIT
Charles F. Grossman, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed May 11, 1970, Ser. No. 22,905
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



220,495
DICTATING MACHINE OR THE LIKE
Christoph Egli and Alfons Boothby, Wilhelmshaven, Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany
Filed Dec. 24, 1969, Ser. No. 20,643
Claims priority, application Germany June 27, 1969
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

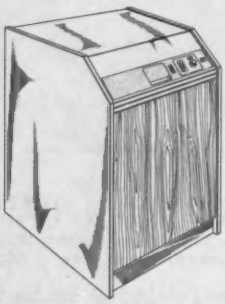


220,496
DICTATING MACHINE WITH EXTENSIBLE MICROPHONE RACK OR THE LIKE
Christoph Egli and Alfons Boothby, Wilhelmshaven, Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany
Filed Dec. 24, 1969, Ser. No. 20,644
Claims priority, application Germany June 27, 1969
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

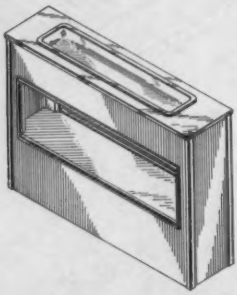


220,497
MICROPHONE FOR DICTATING MACHINE OR THE LIKE
Christoph Egli and Alfons Boothby, Wilhelmshaven, Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany
Filed Dec. 24, 1969, Ser. No. 20,645
Claims priority, application Germany June 27, 1969
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

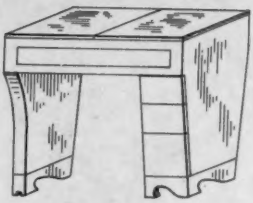
220,498
MAGNETIC TAPE CASSETTE DUPLICATOR
Darrell S. Staley, Santa Clara, Calif., assignor to Ampex Corporation, Redwood City, Calif.
Filed Apr. 17, 1970, Ser. No. 22,493
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—14



220,499
COMBINED PLANTER AND BOOKCASE
John W. Sciortino, 255 W. 96th St., Apt. 1G, Bloomington, Minn. 55420
Filed Feb. 19, 1970, Ser. No. 21,514
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—2

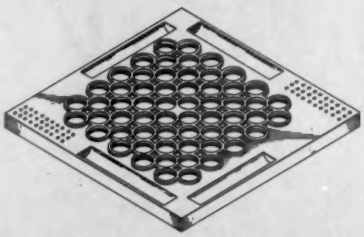


220,500
SEWING MACHINE CABINET
Aubrey M. Chisholm, Box 91, Woodrow, Saskatchewan, Canada
Filed Apr. 4, 1969, Ser. No. 16,578
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D33—12

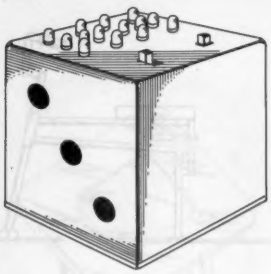


220,501
SITTING KITTY DOLL
Nancy J. Ott, 33879 Nebraska Lane, Yucaipa, Calif. 92399
Filed Feb. 9, 1970, Ser. No. 21,360
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—2

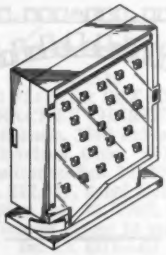
220,502
GAME BOARD
Phyllis Frederick and Peter H. Justin, Plainfield, N.J., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 26, 1970, Ser. No. 21,655
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



220,503
DICE GAME BOX
Donald E. Church, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.
Filed Dec. 17, 1969, Ser. No. 20,533
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

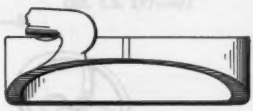


220,504
GAME CASING
Derek J. Gay, Palos Verdes Peninsula, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 26, 1970, Ser. No. 21,651
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

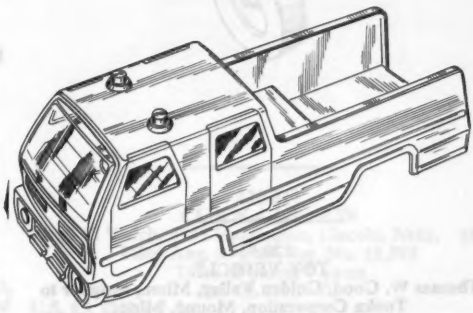


220,505
COMBINED PLAYGROUND CLIMBER AND SLIDE
Ronald W. Zick, Jonesville, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Mar. 19, 1970, Ser. No. 21,984
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5

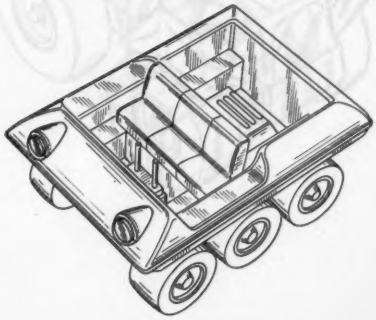
220,506
GOLF PUTTER
Robert J. Mader, Torrance, Calif., assignor to Wilson Sporting Goods Co.
Filed Dec. 8, 1969, Ser. No. 20,392
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



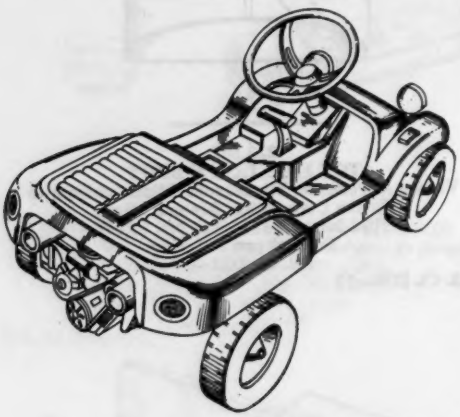
220,507
TOY FIRE TRUCK BODY
Vernon A. Peterson, Minneapolis, Minn., assignor to Tonka Corporation, Mound, Minn.
Filed June 25, 1970, Ser. No. 23,672
Term of patent 7 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



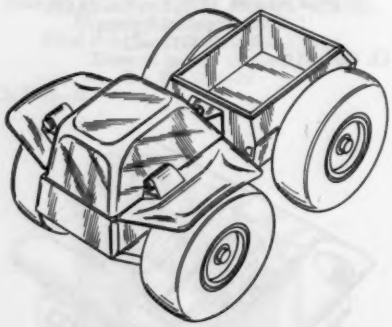
220,508
ALL-TERRAIN VEHICLE TOY
Thomas W. Good, Golden Valley, Minn., assignor to Tonka Corporation, Mound, Minn.
Filed June 29, 1970, Ser. No. 23,696
Term of patent 7 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



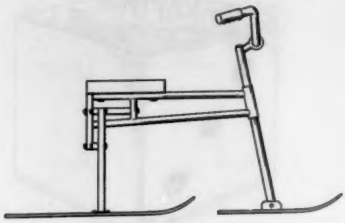
220,509
CHILD'S RIDING TOY
Viktor Schreckengost, Cleveland, Ohio, assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed Mar. 3, 1970, Ser. No. 21,711
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



220,510
TOY VEHICLE
Thomas W. Good, Golden Valley, Minn., assignor to Tonka Corporation, Mound, Minn.
Filed June 29, 1970, Ser. No. 23,695
Term of patent 3½ years
Int. Cl. D21—*02*
U.S. Cl. D34—15

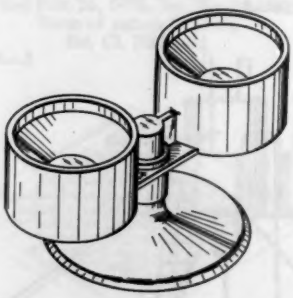


220,511
SKI-CYCLE
Paul Janos, Box 991, Glenwood Springs, Aspen, Colo. 81611
Filed Sept. 8, 1969, Ser. No. 19,052
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—15



220,512
TOY BRIDGE
Robert M. Gutz, Los Angeles, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 19, 1970, Ser. No. 21,522
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

220,513
ROTATABLE RECEPTACLE PIECE FOR TOY TOPS OR THE LIKE
Anthony D. Miller, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 20, 1970, Ser. No. 20,999
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

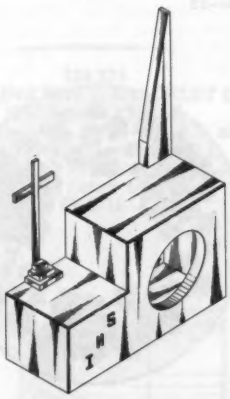


220,514
DRAWING STAND FOR A DOLL OR THE LIKE
Raymond J. Douglas, Lomita, and Cyril Gordon Shireman, Rolling Hills Estates, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 20, 1970, Ser. No. 21,000
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

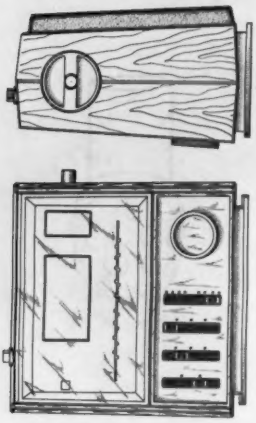
220,515
COMBINED FLOWER POT HOLDER AND BRACKET THEREFOR
William H. Michaels, 3568 Independence Road, Cleveland, Ohio 44105
Original design application Feb. 27, 1968, Ser. No. 10,743, now Patent No. 212,959, dated Dec. 17, 1968. Divided and this application July 26, 1968, Ser. No. 13,617
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3

220,516
DRINKING GLASS OR THE LIKE
Johannes Klober, Schwelm, Westphalia, Germany, assignor to Firma Hans Klober, Schwelm, Westphalia, Germany
Original design application Apr. 16, 1969, Ser. No. 16,765. Divided and this application May 1, 1970, Ser. No. 22,755
Claims priority, application Germany Nov. 25, 1968
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—8

220,517
CLOCK CABINETS
Virgil C. Welch, 4943 Huntington, Lincoln, Nebr. 68504
Filed Aug. 8, 1969, Ser. No. 18,593
Term of patent 7 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



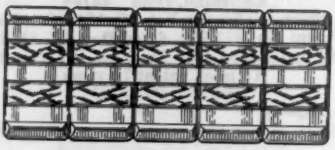
220,518
FM/AM CLOCK RADIO
Andrew Kainass, Syracuse, N.Y., assignor to General Electric Company
Filed June 25, 1970, Ser. No. 23,675
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



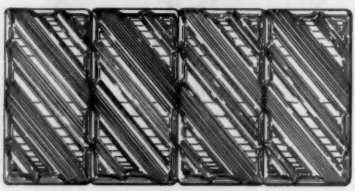
220,519
PLATE OR THE LIKE
Cynthia S. Gerow, Syracuse, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed May 12, 1970, Ser. No. 22,934
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15

220,520
PLATE OR THE LIKE
Ottorino N. Mercadante, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed May 1, 1970, Ser. No. 22,759
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15

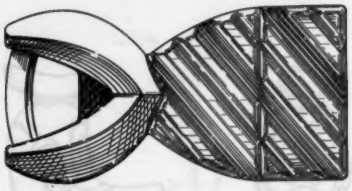
220,521
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Providence, R.I.
Filed Apr. 23, 1970, Ser. No. 22,585
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



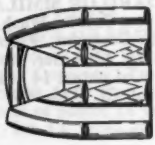
220,522
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Providence, R.I.
Filed Apr. 21, 1970, Ser. No. 22,546
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



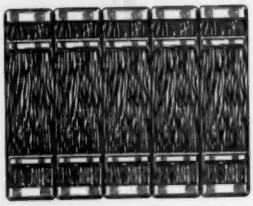
220,523
END LINK FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Providence, R.I.
Filed Apr. 8, 1970, Ser. No. 22,321
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



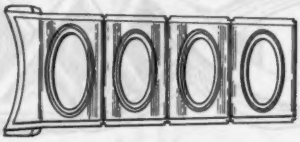
220,524
END LINK FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Providence, R.I.
Filed Mar. 30, 1970, Ser. No. 22,126
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



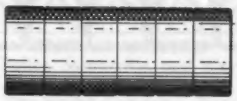
220,525
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Providence, R.I.
Filed May 5, 1970, Ser. No. 22,814
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



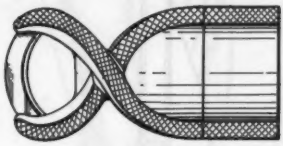
220,526
EXPANSIBLE END LINK FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Providence, R.I.
Filed May 4, 1970, Ser. No. 22,784
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



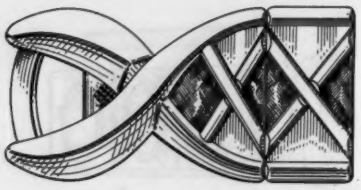
220,527
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Raymond C. Fontaine, Providence, R.I., assignor to Textron Inc., Providence, R.I.
Filed Mar. 23, 1970, Ser. No. 22,027
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



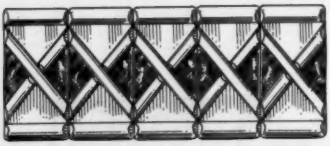
220,528
END LINK FOR A BRACELET OR SIMILAR ARTICLE
Raymond C. Fontaine, Greenville, R.I., assignor to Textron Inc., Providence, R.I.
Filed Mar. 23, 1970, Ser. No. 22,003
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



220,529
END LINK FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Providence, R.I.
Filed May 4, 1970, Ser. No. 22,802
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4

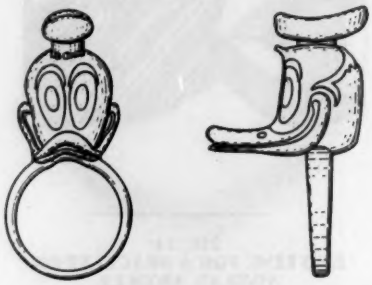


220,530
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Providence, R.I.
Filed May 4, 1970, Ser. No. 22,792
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4



220,531
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Oct. 20, 1969, Ser. No. 19,636
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

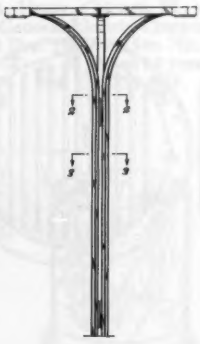
220,532
RING
Charles J. Mineo, 39—50 65th Place, Woodside, N.Y. 11377
Filed Jan. 27, 1970, Ser. No. 21,105
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10



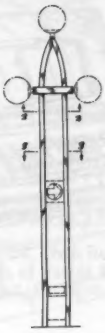
220,533
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Oct. 20, 1969, Ser. No. 19,631
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

220,534
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Oct. 20, 1969, Ser. No. 19,629
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

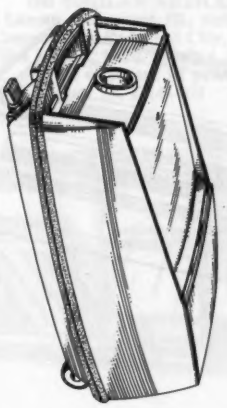
220,535
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Oct. 20, 1969, Ser. No. 19,615
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



220,536
LIGHT STANDARD OR SIMILAR ARTICLE
Robert W. Selden, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Oct. 20, 1969, Ser. No. 19,616
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31

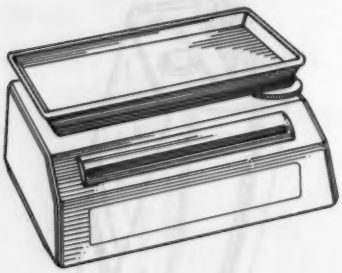


220,537
CANISTER VACUUM CLEANER OR SIMILAR ARTICLE
George D. La Police, Somerville, and Wayne A. Current, Cranford, N.J., and Craig R. Newburgh, Jamaica, N.Y., assignors to The Singer Company, New York, N.Y.
Filed Jan. 7, 1970, Ser. No. 20,792
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D49—14.1



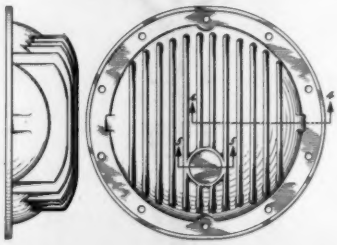
220,538
CASH REGISTER
Elmer J. Stoltz, Castro Valley, and William J. Wohltmann, Jr., Mountain View, Calif., assignors to The Singer Company, New York, N.Y.
Filed Dec. 1, 1969, Ser. No. 20,327
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D52—4

220,539
FOOD WEIGHING SCALE
Ralph R. Dillon, Van Nuys, Calif., assignor to Scale Data Systems, Inc.
Filed Feb. 9, 1970, Ser. No. 21,369
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—10



220,540
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 20, 1970, Ser. No. 22,534
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

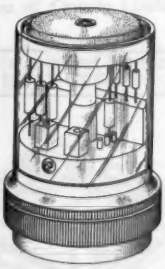
220,541
VEHICLE DIFFERENTIAL HOUSING
Michael D. Liddiard, 242 W. Klo Road, Lathrop, Calif. 95330
Filed Feb. 11, 1970, Ser. No. 21,375
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



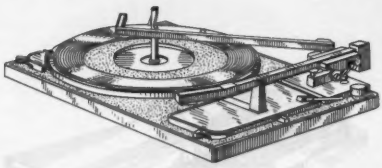
220,542
DRUMSTICK
Michael F. Russell, 2451 Greenwood Road, Lapeer, Mich. 48846
Filed Jan. 15, 1970, Ser. No. 20,932
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D56—1

220,543
RADIO
Stefan A. Unger, Chicago, Ill., assignor to General Electric Company
Filed Dec. 10, 1969, Ser. No. 20,430
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4

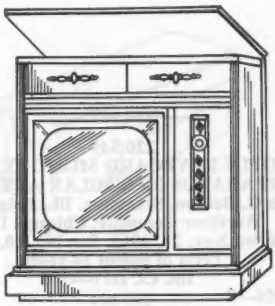
220,544
RADIO
Stefan A. Unger, Chicago, Ill., assignor to General Electric Company
Filed Dec. 10, 1969, Ser. No. 20,432
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



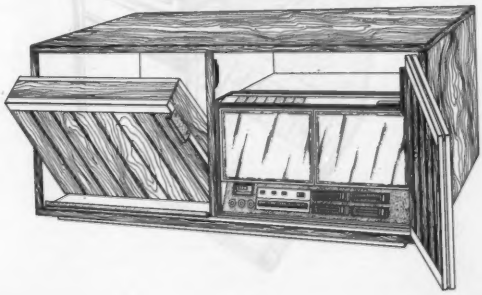
220,545
PHONOGRAPH RECORD CHANGER
John D. Yair, Halesowen, England, assignor to BSR (U.S.A.) Limited, Blauvelt, N.Y.
Filed Dec. 11, 1969, Ser. No. 20,467
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4



220,546
COMBINED RADIO, PHONOGRAPH AND TELEVISION CONSOLE
Daniel J. Domin, Deerfield, and Thomas E. Duvall, Morton Grove, Ill., assignors to TMA Company, Wheeling, Ill.
Filed Dec. 24, 1969, Ser. No. 20,625
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4

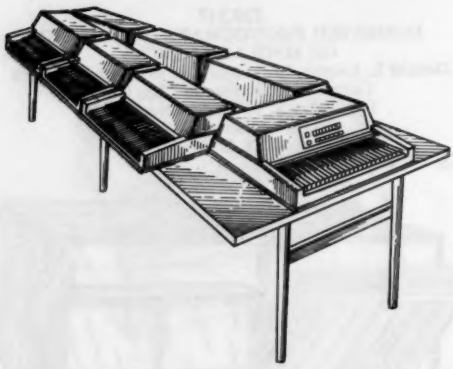


220,547
COMBINED PHONOGRAPH AND RADIO OR SIMILAR ARTICLE
Donald E. Leman, Rosemont, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed May 8, 1970, Ser. No. 22,899
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



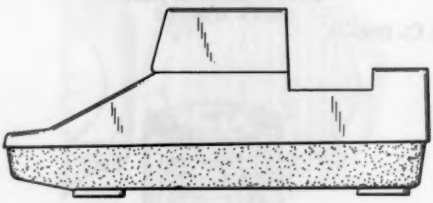
220,548
ELECTROPIANO
Robert L. Ferris and Daniel W. Martin, Cincinnati, Ohio, assignors to D. H. Baldwin Company, Cincinnati, Ohio
Filed June 24, 1969, Ser. No. 17,850
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9

220,549
MULTIPLE KEYBOARD MUSIC TEACHING APPARATUS OR SIMILAR ARTICLE
Kenneth G. Benson, Sycamore, Ill., assignor to The Wurlitzer Company, Chicago, Ill.
Filed Nov. 28, 1969, Ser. No. 20,310
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9

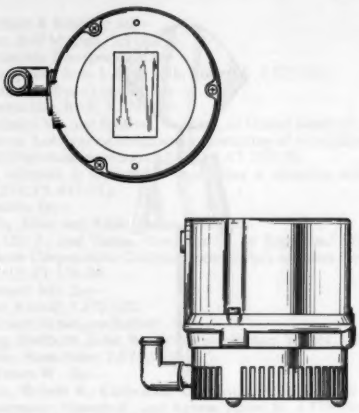


220,550
PIANO
Winsor D. White, Jr., Blowing Rock, N.C., assignor to D. H. Baldwin Company, Cincinnati, Ohio
Filed Feb. 24, 1970, Ser. No. 21,585
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9

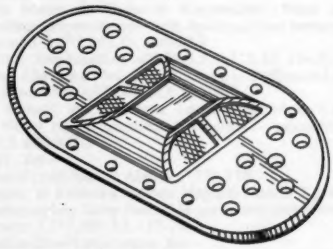
220,551
HOUSING FOR A TYPEWRITER
Alfons Boothby and Georges Joseph, Wilhelmshaven, Germany, assignors to Olympia Werke AG, Wilhelmshaven, Germany
Filed Sept. 17, 1969, Ser. No. 19,192
Claims priority, application Germany Apr. 14, 1969
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



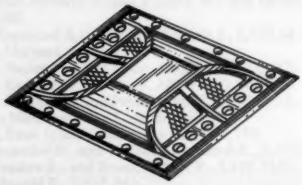
220,552
COMBINED PUMP AND INLET SCREEN
Lee W. Davis, Oklahoma City, Okla., assignor to Little Giant Corporation, Oklahoma City, Okla.
Filed Sept. 10, 1969, Ser. No. 19,097
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1



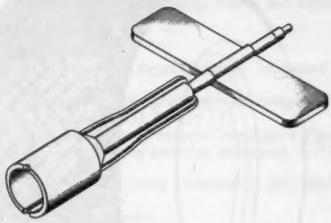
220,553
ROADWAY MARKER
Peter Hedgewick, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Amherstburg, Ontario, Canada
Filed Jan. 12, 1970, Ser. No. 20,896
Term of patent 7 years
Int. Cl. D29—*99*
U.S. Cl. D72—1



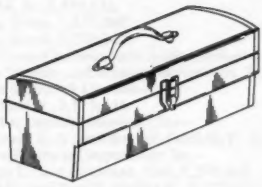
220,554
ROADWAY MARKER
Peter Hedgewick, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Amherstburg, Ontario, Canada
Filed Jan. 12, 1970, Ser. No. 20,899
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1



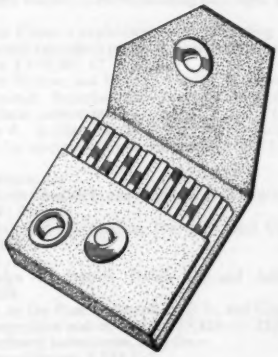
220,555
COMBINED HANDLE AND PROTECTOR UNIT FOR A MEDICAL INFUSION NEEDLE
Donald R. Reiterman, Sierra Madre, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Apr. 16, 1970, Ser. No. 22,470
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—12



220,556
TOOL BOX OR SIMILAR ARTICLE
Jack Evans, Grant Park, Ill. 60940
Filed Feb. 4, 1969, Ser. No. 15,616
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



220,557
COMBINED ELECTRICAL KEY AND CASE
Alfiero F. Balzano, Los Angeles, Calif., assignor to Digital Identification Systems, Inc., Sun Valley, Calif.
Filed Dec. 12, 1969, Ser. No. 20,484
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—8



220,558
TIRE
Armand V. Pedroso, Barberton, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Nov. 21, 1969, Ser. No. 20,217
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—20

220,559
SIGN
James T. Hight, Darien, Conn., assignor to American Dairy Queen Corporation, Minneapolis, Minn.
Filed Mar. 21, 1969, Ser. No. 16,360
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12

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Biermann, David, to Hartzell Propeller, Inc. Method and apparatus for operating a propeller and driving engine fuel valve. 3,575,529, Cl. 416-27.

Bigliardi, Achille M., Jr.; Coburn, Kenneth E.; Scheer, Frederick A.; and Thompson, Robert J., to Ford Motor Company. Method of manufacturing tapered glass. 3,575,694, Cl. 65-63.

Bigot, Johan A.; Van Mourik, Johannes; and Van Beveren, Johannes, to Stamicarbon N.V. Ionic polymerization of lactams with a derivative of a carboxylic ester of a ketoxime as promoter. 3,575,937, Cl. 260-78.

Billings, Raymond T. Gilding machine. 3,575,772, Cl. 156-540.

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Bloch, Roy W., to Ekco Products, Inc. Pan carrier. 3,575,455, Cl. 294-16.

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Bloom, Stanley M.; and Rogers, Howard G., to Polaroid Corporation. Photographic products and processes comprising alkali-hydrolyzable antifoggant precursors. 3,575,699, Cl. 96-3.

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Blum, James E.; and Johnson, Robert P., to Bell & Howell Company, mesne. Precision production potting. 3,575,366, Cl. 248-19.

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Blumenberg, Hurst H., to Kentucky Electronics, Inc. Electrode mounting brackets producing shorter electron gun mounts in cathode ray tubes. 3,575,626, Cl. 313-82.

Blunt, Harry W., to Hercules Incorporated. Forming small particles of polypropylene by direct polymerization. 3,575,948, Cl. 260-93.7

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Bockstie, Lawrence G., Jr., to Corning Glass Works. Impregnating and coating composition for porous ceramic insulation. 3,575,916, Cl. 260-33.4

Boddy, Ronald J., to Sylvania Electric Products, Inc. Pulse train extractor system. 3,575,215, Cl. 328-139.

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Bohn, Jacob L., to BNK Instrument Company. High speed camera. 3,575,498, Cl. 352-84.

Boissier, Jacques Robert; and Ratouis, Roger, to Societe Industrielle pour La Fabrication des Antibiotiques (S.I.F.A.). Aminoether derivatives of 9,10-dihydro-9,10-ethano- 9-anthrols and their salts. 3,576,000, Cl. 260-326.5

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Bosch, Robert Hausgerate G.m.b.H.: *See—*
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Boulton, John, to Atomic Energy of Canada Limited. Hydriding resistant zirconium alloy components. 3,575,806, Cl. 176-50.

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Yamamoto, Kenichi; Nakazawa, Atushi; and Utsumi, Mitsunori, to Toyo Kogyo Company Limited. Side housing of rotary piston engine. 3,575,537, Cl. 418-60.0 3
Yamamoto, Yoshihiro: *See—*
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Yoon, Kue H.; and Wolf, Charles B., to Westinghouse Electric Corporation. Arc heater having a spirally rotating arc. 3,575,633, Cl. 315-111.
Yoshida, Kasumi; Satou, Takehide; Matsushima, Masato; and Fujii, Yoshio, to Hitachi, Ltd. Sample introducing system for use in liquid chromatography. 3,575,295, Cl. 210-198.
Yoshidome, Hideo: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF APRIL, 1971

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Bourns, Inc.: *See*—
Miller, Kenneth F., and Smith. Re. 27,116.

Byrne, John F., and P. F. Kurz, to Xerox Corporation. Metal free phthalocyanine in the new X-form. Re. 27,117, 4–20–71, Cl. 260—314.5.

Goff, Kenneth W., and S. C. Gupta, to Leeds & Northrup Company. Mass-flow rate control. Re. 27,115, 4–20–71, Cl. 222—58.

Gupta, Suresh C.: *See*—
Goff, Kenneth W., and Gupta. Re. 27,115.

Kurz, Philip F.: *See*—
Byrne, John F., and Kurz. Re. 27,117.

Leeds & Northrup Company: *See*—
Goff, Kenneth W., and Gupta. Re. 27,115.

Miller, Kenneth F., and M. H. Smith, to Bourns, Inc. Piezoelectric multielement device. Re. 27,116, 4–20–71, Cl. 310—9.

Smith, Melvin H.: *See*—
Miller, Kenneth F., and Smith. Re. 27,116.

Xerox Corporation: *See*—
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Akehurst Nurseries: *See*—
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Aldridge, Edgar G., and L. L. Aldridge, to Aldridge, Inc. Hydrangea plant. 3,047, 4–20–71, Cl. 54.

Aldridge, Inc.: *See*—
Aldridge, Edgar G., and L. L. 3,047

Aldridge, Loren L.: *See*—
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Cole Nursery Company, Inc.: *See*—
Simpson, Robert C. 3,052.

Commonwealth of Puerto Rico: *See*—
Pennock, William. 3,050.

Graham, Edna. Strawberry. 3,049, 4–20–71, Cl. 49.

Holtkamp, Hermann. African violet. 3,053, 4–20–71, Cl. D69.

Jackson & Perkins Company: *See*—
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Pennock, William, to Commonwealth of Puerto Rico, as the representative of all the people of Puerto Rico. Avocado. 3,050, 4–20–71, Cl. 44.

Simpson, Robert C., to Cole Nursery Company, Inc. Flowering crabapple tree. 3,052, 4–20–71, Cl. 34.

Spek, Jan, to Jackson & Perkins Company. Rose plant. 3,051, 4–20–71, Cl. 29.

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Abeles, Lowell. Marine terminal block. 220,490, 4–20–71, Cl. 26—1.

American Dairy Queen Corp.: *See*—
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American Hospital Supply Corp.: *See*—
Reiterman, Donald R. 220,555.

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Araneida, Inc.: *See*—
Brenner, Elliott H. 220,475.

Asko Osakeyhtio: *See*—
Aarnio, Eero. 220,481.

Avco Corp.: *See*—
Church, Donald E. 220,503.

BSR (U.S.A.) Ltd.: *See*—
Yair, John D. 220,545.

Baldwin, D. H., Co.: *See*—
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Benson, Kenneth G., to The Wurlitzer Company. A multiple keyboard music teaching apparatus or similar article. 220,549, 4–20–71, Cl. D56—9.

Blanchette, Edgar, to Ferrajet Inc. Motor vehicle. 220,479, 4–20–71, Cl. D14—3.

Blumcraft of Pittsburgh: *See*—
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Boothby, Alfons: *See*—
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Egli, Christoph, and Boothby. 220,496.
Egli, Christoph, and Boothby. 220,497.

Boothby, Alfons, and G. Joseph, to Olympia Werke A.G. Housing for a typewriter. 220,551, 4–20–71, Cl. D64—11.

Brenner, Elliott H., to Araneida, Inc. Building. 220,475, 4–20–71, Cl. D13—1.

Burks & Landberg, Architects: *See*—
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Church, Donald E., to Avco Corp. Dice game box. 220,503, 4–20–71, Cl. 34—5.

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Plant Patents

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18 : 3,052

24 : 3,048

36 : 3,049

43 : 3,050

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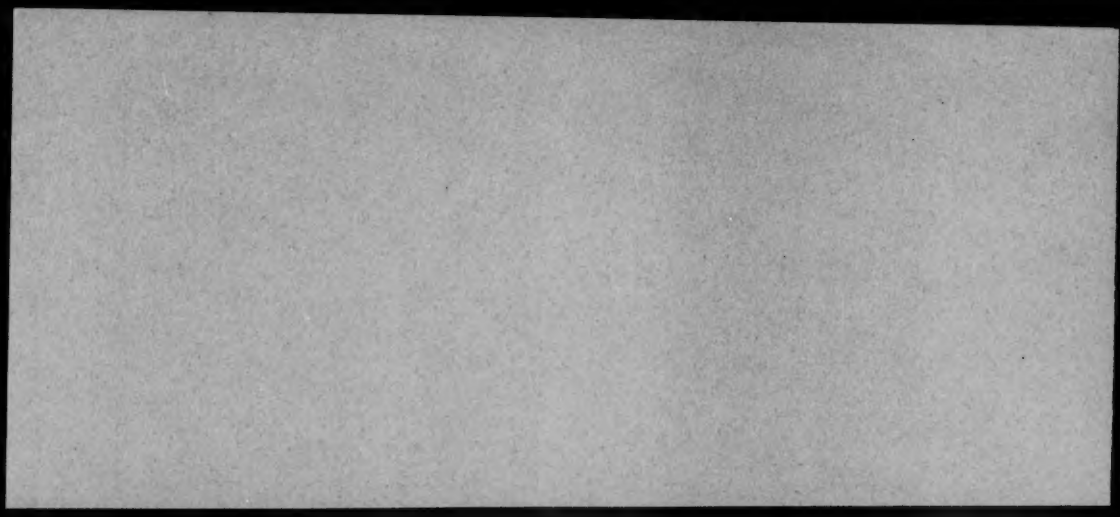

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